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TITLE OF INVENTION	
54	A METHOD OF CONDUCTING A FINANCIAL TRANSACTION

BACKGROUND OF THE INVENTION

THIS invention relates to a system for conducting a financial transaction between a purchaser and a vendor of a product, and to a method of conducting such transactions.

Efforts by banks to provide customers with improved service and access to banking facilities have resulted in an increasingly large number of ATM's being installed at shopping centres and at banks themselves. The ATM network has consequently grown to cover almost every corner of the country and, at least in urban areas, an ATM can easily be accessed by a large percentage of the population.

ATM's are particularly attractive to both banks and customers as they allow bank customers to perform routine banking transactions at locations and times that are convenient to the customer. The need for over-the-counter service personnel at banks has also been reduced as more customers make use of ATM's to withdraw and deposit cash, and to obtain financial statements relating to their bank accounts. Banks have also benefitted from the increased number of banking transactions that have occurred as a result of the proliferation of ATM's in that increased revenues have been generated as transaction fees.

While the success of ATM's is undoubted, the services currently offered by ATM's are limited, and the capabilities of ATM's have not been fully exploited.

SUMMARY OF THE INVENTION

According to a first aspect of the invention there is provided a method of conducting a financial transaction between a purchaser and a vendor of a product, the purchaser and the vendor being associated with respective first and second accounts held at respective first and second financial institutions, the method comprising the steps of :

providing at least one vendor database including product-related information;

linking a data exchange terminal to the at least one vendor database via a data network linking said first and second financial institutions;

obtaining transaction-related information regarding a product required from the purchaser via the terminal;

communicating the transaction-related information via the network to the at least one vendor database; and

initiating an electronic transfer of funds from the first account to the second account for the value of the transaction.

The first and second financial institutions may comprise the same financial institution.

The transferring of funds electronically typically may involve debiting the first account and crediting the second account.

The method preferably includes the step of obtaining an access code from the purchaser to verify authorisation of the transaction.

In one envisaged application, the funds may be transferred electronically between the first and second accounts in real time response at the conclusion of the transaction.

Alternatively, the funds may be transferred electronically between the first and second account at a predetermined future time.

The terminal preferably includes display means, and the method preferably includes the step of displaying at least one enquiry menu on the display means to obtain transaction-related information from the purchaser.

The method may include the step of incorporating icons associated with options relating to the transaction into the at least one enquiry menu so that the purchaser is able to provide the transaction-related information by selecting an icon displayed on the display means.

The method preferably includes the steps of displaying at least part of the product-related information of the display means, and updating the

product-related information in real time response or on the occurrence of a transaction between the purchaser and the vendor.

Typically, the transaction-related information may include at least the value of the transaction and details of the first account to or from which funds are to be electronically transferred.

The method preferably includes any one or more of the steps of verifying the availability of funds in the first account, the availability of the vendor product or the qualification of the purchaser to perform the transaction before conclusion of the transaction.

Conveniently, the method may include the step of printing a record of the transaction which serves as proof of the transaction.

The method may also include the step of reading indicator means at the terminal, the indicator means being configurable by the purchaser to indicate the transaction-related information.

In the envisaged embodiment, the method may include the step of incorporating the transaction-related information into a statement issued by the first or second financial institution to the purchaser or vendor.

Also included within the scope of the invention is a method of conducting a financial transaction between a purchaser and a vendor of a product or service, the method including the steps of:

- providing a computerized banking system including a plurality of financial institutions; each of said plurality of financial institutions comprising a computer centre comprising a plurality of computer based client accounts, an electronic data network interconnecting said computer centres; and a plurality of data exchange terminals connected to the said network;
- providing at least one vendor database including product or service related information connected to said network;
- providing product or service related information to the purchaser via one of said terminals;
- communicating to the vendor database via the network product or service related information regarding a product or service required by the purchaser and which information is provided by the purchaser via one of said terminals; and
- initiating payment by the purchaser for the product or service in an amount equal to the value of the transaction.

According to a second aspect of the invention there is provided a system for conducting a financial transaction between a purchaser and vendor of a product, the purchaser and the vendor being associated with respective first and second accounts held at respective first and second financial institutions, the system comprising:

a data exchange terminal including data input and output means;

at least one vendor database including product-related information;

communication means for linking the terminal to the at least one vendor database, the first financial institution and the second financial institution; and

system software for providing communication of product related information of a transaction between the terminal and the at least one vendor database and for transferring funds electronically between the first and second accounts for the value of the transaction.

The first and second financial institution may be the same financial institution.

The data exchange terminal is preferably bank service terminal, such as an ATM.

The communication means preferably comprises an ATM network to which the terminal, the at least one vendor database, and the first and second financial institutions are linked to facilitate the communication therebetween.

Conveniently, the system software preferably facilitates the transfer of funds electronically between the first and second accounts in real time response at the conclusion of the transaction, or at a future predetermined time.

The terminal, the first or second financial institution or the at least one vendor database may have storage means for storing the product-related information, at least part of the system software or transaction records, and wherein the product-related information or the transaction records are accessible at the terminal.

The system may include a portable storage device adapted to store product-related information and/or at least part of the system software and/or transaction records.

The portable storage device preferably comprises a smart card.

The product-related information is preferably accessible via the data output means of the terminal and may be updatable in real time or on the occurrence of a transaction between the purchaser and the vendor.

The data output means of the terminal preferably includes a screen, and the system software includes menu drivers for producing enquiry menus on the screen which the purchaser utilises to provide transaction-related information via the data input means of the terminal to the system.

The enquiry menus may include icons associated with transaction options, and the purchaser is preferably able to select a transaction option by selecting an icon using the data input means.

The communication means may include conventional telephone lines and interface means for allowing the at least one vendor database to communicate with the remote terminal utilizing established ATM message protocols.

Typically, the terminal may include printing means for issuing a record of the transaction or a voucher which serves as proof of the transaction.

In a preferred embodiment, the data input means of the terminal may include a reader for reading an indicator means configured by the purchaser to indicate transaction-related information.

The reader preferably comprises an optical reading device, and the indicator means comprises a card configurable to visually indicate the transaction-related information.

Also included within the scope of the invention is a system for conducting a financial transaction between a purchaser and a vendor of products or services, the system including:

- a computerized banking system including;
- a plurality of financial institutions;
  - each of said plurality of financial institutions including a computer centre including a plurality of computer based client accounts;
  - said computer centres being interconnected by an electronic data network;
  - a plurality of data exchange terminals connected to said electronic data network;
- at least one vendor database comprising product or service related information connected to said network; and
- system software providing, via the network, communication of the product or service related information between said plurality of data exchange terminals and said at least one vendor database, and for initiating payment by the purchaser for products or services purchased from said vendor database.

Yet further included within the scope of the invention is a system for conducting a financial transaction between a purchaser and a vendor of products or services, the system including an electronic data network including a plurality of bank service terminals for use by a purchaser; at least one vendor database comprising product or service related information connected to said electronic data network and accessible from said terminals; and system software providing communication of product or service related information between said terminals and said at least one vendor database and for initiating payment by the purchaser through said electronic data network for products or services purchased.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic illustration of a transaction system according to the invention for conducting a transaction between a vendor and a purchaser;

Figure 2 is a schematic illustration of a vendor database provided by a vendor and which constitutes part of the transaction system of Figure 1;

Figure 3 is a schematic illustration of a data processing system at a computer centre of a bank , the data processing system forming part of the transaction system of Figure 1;

Figure 4 is a schematic illustration of an ATM interchange which forms part of the transaction system of Figure 1;

Figure 5 is a schematic illustration of components of an ATM which constitute part of the transaction system of Figure 1;

Figures 6(a) to (c) are flow diagrams depicting interrogation and verification procedures incorporated in system software of the transaction system of Figure 1;

Figure 7 is an illustration of a basic function enquiry screen which is displayed on the ATM depicted in Figure 5;

Figure 8 is an illustration of an account enquiry screen which is displayed on the ATM;

Figure 9 is an illustration of a product main menu screen which is displayed on the ATM;

Figures 10(a) to (h) show a series of screens displaying menus for exercising transaction options for a betting transaction;

Figure 10(i) shows a voucher or transaction record that is produced by the ATM at the conclusion of the transaction of Figures 10(a) to (h);

Figures 11(a) to (h) show a series of screens displaying menus for exercising transaction options relating to a share purchase transaction;

Figure 11 (i) shows a voucher or transaction record that is produced by the ATM at the conclusion of the transaction of Figures 11(a) to (h);

Figures 12(a) to (h) show a series of screens showing menus for exercising transaction options relating to a ticket purchasing transaction;

Figure 12 (i) shows a voucher or transaction record that is produced by the ATM at the conclusion of the transaction of Figures 12(a) to (h);

Figures 13(a) to (g) show various examples of product information

screens that are displayed by the ATM;

Figure 14(a) is a flow chart showing the sequence of transaction options presented to a purchaser when conducting a betting transaction on the ATM;

Figure 14(b) shows a flow chart showing the sequence of transaction options presented to a purchaser when performing a share purchasing transaction;

Figure 14(c) shows a flow chart showing the sequence of transaction options presented to a purchaser when performing a unit trust purchase transaction;

Figure 14(d) shows a flow chart showing the sequence of transaction options presented to a purchaser when performing an entertainment ticket purchase;

Figure 14(e) shows a flow chart showing the sequence of transaction options presented to a purchaser when performing a sports event ticket purchase;

Figure 14(f) shows a flow chart showing the sequence of transaction options presented to a purchaser when conducting a travel ticket purchase;

Figure 14(g) shows a flow chart showing the sequence of transaction options presented to a purchaser when

conducting a futures purchase transaction;

Figure 14(h) shows a flow chart showing the sequence of transaction options presented to a purchaser when performing an insurance purchase transaction;

Figures 15(a) & (b) show alternative icon-driven menus;

Figure 16(a) is a front view of an ATM modified to receive a data card; and

Figure 16(b) shows examples of a number of different data cards.

DESCRIPTION OF EMBODIMENTS

For the purposes of this specification, the term " remote data exchange terminal" shall be to taken to include an automatic teller machine (ATM), a so-called self service teller (SST) and a client-activated terminal (CAT). The term "ATM Network" refers to an ATM interchange or switch, and the communication lines which link the ATM interchange to an ATM and to a computer centre of a bank. The communication lines may either be direct or dial-up telephone lines, or an otherwise dedicated communication link.

Turning firstly to Figure 1, a transaction system 10 for conducting a transaction between a vendor and a purchaser comprises one or more ATM's 12 of a particular bank XYZ. The ATM's 12 of the XYZ bank

are linked via communication line 13.1 to a data processing system 14, which includes an ATM controller, located at a computer centre of the XYZ bank. Transactions that are conducted at the ATM 12 by a purchaser who holds an account at the XYZ bank are communicated directly to the data processing system 14 via the communication line 13.1. The data processing system 14 of the bank includes data storage means 16, and interface means 18 for allowing communication of the data processing system 14 with an ATM network 20 via a communication link 13.2.

In the event that a purchaser does not hold an account at the XYZ bank, transaction details are communicated via the communication line 13.3, or via the data processing system 14 and communication lines 13.1 and 13.2, to the ATM network 20 which then relays these details to the computer centre of the relevant bank.

The ATM network 20 includes an ATM switch or interchange 21 and provides communication between ATM's, point-of-sale (POS) devices, bank branches, and the computer centres of the banks which are linked into the network. ATM networks currently operational in South Africa include the SASWITCH and MULTINET networks. The computer centres 22 of a plurality of other banks A to H are linked to the ATM network 20 via the communication link 13.4. The computer centre 22 of each bank is then of course accessible by all branches of that bank either by way of a dedicated communication line or via the ATM network 20.

A vendor database 24 is linked into the transaction system 10 in a

number of ways. Firstly, the vendor database 24 is directly linked to at least one ATM 12 via a communication link 13.6. Secondly, the vendor database 24 is linked to the data processing system 14 of the XYZ bank via communication link 13.8, and to the computer centres of other banks 22 via a communication link 13.9. Finally, the vendor database 24 may optionally be linked to a central vendor controller 25, which serves to consolidate and control the inputs from a number of vendor databases 24. The central vendor controller 25 is then linked into the ATM network 20 via communication link 13.10, or directly into the data processing system 14 of the XYZ bank via communication link 13.11.

An independent vendor product information updating system 26, such as Beltel or Computicket, is linked into the ATM network 20 or the data processing system 14 via communication links 13.12 and 13.13 respectively. Alternatively, the updating system 26 could be linked directly to an ATM. In certain applications, the vendor product information updating function may be undertaken by the vendor database 24 directly, in which case the updating system 26 would be redundant. Furthermore, the central vending controller 24 could be dispensed with, and a plurality of vendor databases 22 could be linked directly into the ATM network 20 or to the data processing system 14 of the XYZ bank.

The communication links between the various components of the transaction system 10 are of course bi-directional, and may comprise direct or dial-up telephone lines, or a dedicated communication line. The various components of the transaction system 10 are each provided with interface means, which allows a particular component to

communicate with any of the other components of the transaction system 10 using established ATM message protocols.

The transaction system 10 includes system software which facilitates communication between the various components of the system 10, and includes menu drivers for producing menus on display means, such as a cathode ray tube (CRT) incorporated into the ATM. The system software also includes software for producing and storing transaction records, and updating product- related information that is displayed at the ATM. The system software may be stored in storage means, such as a hard disc, CD-ROM, random access memory (RAM) integrated circuit, read only memory (ROM) integrated circuit or a tape provided at either the ATM 12, the data processing system 14 of the computer centre, the ATM network 20, or the vendor database 24. Of course, the entire system software need not necessarily be stored exclusively at any one of the above listed locations, in which case the system software would be configured to interact and communicate to ensure the desired functioning of the transaction system 10.

The system software, or part thereof, and transaction-related information could also be stored on portable storage means which is carried by a purchaser, and which allows the purchaser to utilise the transaction system 10. Such portable storage means could be a card having memory means, such as a "smart card", or a simple 3½" or 5¼" computer diskette. The purchaser would then insert the portable storage device into an appropriate reader provided at the ATM to download the system software into the memory of the ATM 12.

It is also envisaged that a clearing house (not shown) will be linked to, or incorporated into, the transaction system 10, by being linked directly into the ATM network 20, or to the data processing system 14 at a computer centre of a bank. The clearing house would be accessed by the transaction system 10 to verify and authorise certain types of transactions so as to minimise the occurrence of fraud in transactions performed on the system 10.

Figure 2 shows an example of a vendor database 24, which may comprise a central processing unit (CPU) 27, a communication interface 26 which communicates via communication links 13 with the other components of the transactions system 10. A plurality of databases 30 are linked to the CPU 27 via a data base controller 32. The databases 30 are typically client, product and fund management databases, to name but a few. The product and client databases 30 are updatable with transaction-related information received from the ATM at the successful conclusion of a transaction. The vendor database 24 is linked via a communication link 34 to an external information source 36 which provides information to the vendor database 24 for updating the databases 30. A printer 38 and a CRT 40 are also included in the vendor database 24.

Referring to Figure 3, there is shown the data processing system 14 of the computer centre of the XYZ Bank. The data processing system 14 comprises a central processing unit (CPU) 42 which is connected by communication links 43.1 to 43.4 to external units such as point-of-sale devices, ATM groups and bank branches. The CPU 42 is further connected to storage means 43 and a number of external databases 44.

The CPU 42 is also connected to the ATM network 20 via the communication link 43.5. Data updating facilities 46 and modus function facilities 48, for performing functions such as data compression, may also be linked to the CPU 42.

Figure 4 shows a more detailed schematic representation of the ATM switch or interchange 21. The interchange 21 includes a bank interface unit 50 for providing communication links 52.1 to 52.5 with various banks or bank branches. A point-of-sale (POS) interface allows the interchanger 21 to communicate via communication links 56.1 and 56.2 with various point-of-sale devices. The interchange 21 is also provided with storage means 58 for storing, for example, a number of databases and software for controlling the functioning of the interchange 21. Finally, a general purpose ATM interface 60 allows a number of other units to be connected and feed into the interchange 21, such as the vendor database 24 and the vendor product information updating system 26.

In Figure 5, the basic components of an automatic teller machine (ATM) 12 are schematically depicted. A CPU 62 is connected to display means in the form of a CRT 64, first input means in the form of a numeric keypad or touch screen 66, second input means in the form of a card reader 68 which may be a magnetic or optical card reader, a printer 70, and third input means 72 which may be a disk drive or CD-ROM reader. A communications interface 74, which may for example be a dial-up modem or a dedicated tie-line interface, connects the ATM 12 to the data processing system 14 of a bank, or to an ATM network 20. The ATM 12 may furthermore include storage means in the form

of a hard disc 76, or a random-access-memory (RAM) integrated circuit 78. The storage means preferably stores at least part of the system software, and in a preferred embodiment, stores menu drivers for generating menus on the CRT 64 so as to allow a purchaser to perform a transaction at the ATM 12. The ATM 12 may also be provided with back-up storage means 80.

The function of the transaction system 10 will now be described with reference to Figures 6(a) to Figure 16(b). The primary function of the transaction system 10 is to allow an ATM purchaser to perform a transaction, be it a financial or information transaction, with a vendor at any ATM which forms part of the transaction system 10. Such transactions could include placing a bet on a horse race via a totaliser, purchasing shares through a stock broker, purchasing unit trusts, buying tickets for the theatre or a motion picture performance, buying tickets for a sports event, buying travel tickets, purchasing futures options via the South African Futures Exchange (SAFEX), or purchasing insurance.

To enable an ATM purchaser to conduct a transaction, the system software, which may be stored on any one or more of the components of the transaction system 10, includes menu drivers for producing enquiry menus through which the purchaser is systematically interrogated regarding various transaction options so as to allow the transaction system 10 to glean the transaction-related information from the purchaser required to perform the transaction. The transaction-related information is then transmitted to the vendor database, which then stores this information so that the vendor database has knowledge and records of the transaction.

The implementation of the enquiry menus can be achieved in a number of ways which are discussed below.

Irrespective of the menu format, the interrogation and verification procedures embodied in the system software remain the same. Examples of interrogation and verification procedures that could be embodied in the system software are graphically illustrated by the flow charts of Figures 6(a) to Figures 6(c). The interrogation and verification procedure illustrated in Figure 6(a) commences with a transaction initiation request which requires the purchaser to insert his or her ATM card into the card reader 68 of the ATM. Once the card has been inserted into the slot, the transaction system 10 will confirm that the transaction is authorised by requesting the purchaser to enter an access code, or personal identification number (PIN). Once the PIN has been verified, the purchaser is requested to select a service to be accessed. The purchaser then completes a selection procedure which involves choosing between a predetermined number of transaction options. After the selection of at least some of the transaction options, the system software will perform a number of checks to determine whether the selection is valid before proceeding to present further transaction options. Once the various transaction options of a transaction have been selected the transaction will be confirmed, the transaction-related information will be transmitted to the vendor database for updating purposes and the purchaser is free to perform a further transaction if required.

Figures 6(b) and Figures 6(c) illustrate examples of procedures that fall under the "SELECTION VALID ?" procedure which is shown in Figure

6(a). This "SELECTION VALID ?" procedure involves conducting checks to ensure that the transaction options selected by a purchaser are valid and can be fulfilled. For example, Figure 6(b) shows a check procedure conducted by the system software when a purchaser specifies a certain transaction value. The check procedure will then proceed to verify that an account selected by the purchaser from which funds are to be transferred in fact contains sufficient funds for the completion of the transaction. Should the selected account, for example a cheque account, not have sufficient funds, the purchaser may then optionally select another account, such as a credit card account, from which the funds should be transferred. Should it transpire that the purchaser possesses insufficient funds in his or her accounts to complete the transaction, the system software will abort the interrogation verification procedure.

Figure 6(c) shows a check procedure conducted by the system software to ensure that a product which forms the subject of a transaction is in fact available. For example, when purchasing tickets for a theatre or sports event, the seats that the purchaser wishes to book may already have been sold to a customer via another ATM, or for example by Computicket. Alternatively the stocks of a certain product may have been depleted, or the response time for a contract may have expired, in which case the product will not be available. In these scenarios, the system software will either ask the purchaser to exercise an alternate transaction option, or will abort the interrogation and verification procedure depicted in Figure 6(a).

Information as to whether a product is available is supplied to the system software via the vendor product information updating system 26

shown in Figure 1, or by the vendor database 24 itself.

It is also envisaged that the "SELECTION VALID ?" procedure may include other check procedures which, for example, may prohibit a purchaser from performing a certain transaction if he or she is below a certain age, or is disqualified on some other ground from performing the transaction. A purchaser under the age of 21 can in this way be prohibited by a check procedure from purchasing shares from a vendor database 24 linked to the Johannesburg Stock Exchange. This check procedure can also be used to prevent the sale of motion picture tickets for an age-restricted motion picture to an under-aged purchaser.

If it transpires that a purchaser does not have sufficient funds any of his or her accounts, the purchaser may be given the option of obtaining credit facilities. To establish whether the purchaser qualifies for credit facilities, and if so, the value of credit facilities, the system software may perform a credit evaluation by analysing data obtained from the purchaser's financial institution, credit organisations or a vendor database. The credit facilities are then given to the purchaser either by extending the credit limit on an existing account held by the purchaser, or by opening a new account, having credit facilities, in the name of the purchaser.

The interrogation procedures embodied in the system software are realised through menu drivers incorporate into the system software and which produce a plurality of menus, which are displayed on the CRT or screen 64 of an ATM. The system software incorporating the menu drivers is preferably stored on the hard drive 76 of an ATM, but could

alternatively be stored in any of the other components of the transaction system 10, such as the ATM interchange or the vendor database 24.

A number of the menus produced by the system software will now be described merely for illustrative purposes. The first two menus generated by the system are standard menus that currently appear on a number of ATM's, the first menu inviting a purchaser to insert a magnetic-strip card into the card reader 68 of the ATM. Once a purchaser's card has been read by the card reader 68, a second menu will request the purchaser to enter his or her personal identification number (PIN). Optionally, the purchaser may requested to enter a second access to increase the security of the system. Assuming that access is granted to the purchaser, the menu shown in Figure 7 will appear on the ATM screen 64. This menu basically corresponds to menus that currently are available on ATM's, but differs in that an extra option is provided, namely the "PRODUCTS" option which is shaded. If only one type of product transaction can be conducted from the ATM 12, the "PRODUCTS" option may be replaced by a more specific product option, such as for example "SHARES", which option will allow the purchaser to purchase only shares.

Once the purchaser has indicated that he wishes to utilise the "PRODUCTS" option by pressing a key 82 corresponding to this option, the menu illustrated in Figure 8 will appear. The purchaser must then select an account from which funds are to be transferred to perform the transaction. Having selected an account, the product main menu shown in Figure 9 will be presented to the purchaser. The product main menu provides the purchaser with a selection of products that can be

purchased from a vendor database 24 via the transaction system 10 at the ATM 12. In the illustrated example, the purchaser is presented with the option of purchasing shares, unit trusts, entertainment tickets, futures contracts, or placing a bet at a totaliser.

By way of example, the transaction options presented by menus for placing a bet with a totaliser are shown in Figures 10(a) to (h). As is apparent from the illustrated menus, the purchaser can exercise options regarding the following criteria:

1. The province in which the race is to be run;

2. The number of the race;

3. The value of the bet to be placed on the race;

4. The type of bet to be placed; and

5. The number of the horse the purchaser wishes to back.

Figure 10(h) shows a confirmatory screen which in the purchaser's various selections and the transaction-related information is confirmed. At this stage the purchaser may revise or edit any of the transaction options, cancel the transaction or accept and confirm the selection of options.

Figure 10(i) shows a print-out which is generated by the printer 70 of an ATM, and which acts as a voucher or transaction statement, and serves

as proof of the transaction. The transaction-related information is also incorporated into a bank statement issued by the bank to the purchaser so that the purchaser is provided with a record of transactions conduct at the end of each month.

An important feature of the system software is that, once a transaction has been completed, the system software has the ability to debit and credit the respective accounts of the purchaser and the vendor to reflect the value that has changed hands in the course of the transaction. This feature is believed to be unique to the above transaction processing system as, via the ATM network, the system software has access to the accounts of both the purchaser and the vendor, and can thus reflect the exchange of value instantaneously on completion of the transaction. In this way, the vendor is spared the effort of sending an account to the purchaser, and waiting payment in response to the account, as is the case with known "computer-shopping" systems. For example, the statement shown in Figure 10(i) shows that the purchaser has gained winnings of R6412.00, and the system software will thus automatically credit the purchaser's account with this amount, while debiting the vendor's account for the same value.

By way of a further example, the menus for exercising options relating to a share purchasing transaction are shown in Figures 11(a) to Figures 11(h). Having selected the "SHARES" option on the product main menu, the purchaser will then be required to select a share type, such as "MINING". The purchaser is then presented with the various categories of mining shares, before being presented with options relating to specific mines. The purchaser can then opt to either buy or sell a certain

number of shares or a certain value of shares by the menus illustrated in Figure 11(e) and (f). The purchaser can then select a broking firm through which the transaction is to be processed, and a bank account from which the relevant funds are to be transferred. As with the previous example, the printer 70 of the ATM 12 will then produce a statement, such as that indicated in Figure 11(i), which serves as proof of the transaction.

The menus for providing the options relating to a ticket purchasing transaction are illustrated in Figure 12(a) to Figure 12(h), and a voucher produced by the ATM at the conclusion of the transaction is illustrated in Figure 12(i). The system software may be configured to identify venues within a predetermined proximity to the relevant ATM, and only to provide tickets available at such venues to improve the user-friendliness of the system.

Figure 13(a) to Figure 13(g) illustrates selected examples of product information screens that can be presented to purchasers during the course of exercising transaction options on various menus. These product information screens may glean the information display thereby from the vendor product information updating system 26, or a vendor database 24. Furthermore, the system software may update this product-related information in real time or merely when a particular product information screen is required to be displayed at an ATM. The product information screens may perform a number of functions, including providing the purchaser with information useful or essential to performing the transaction, such as the history of a share or a particular horse, or the seat locations on an aircraft or in a theatre or stadium.

The product information screens may also provide the purchaser with a summary of his or her share portfolio prior to buying or selling shares, or a summary of transactions conduct by the purchaser on the system 10 over a predetermined period of time. Of course, the illustrated examples are merely a selection of product information screens that could be produced to assist the purchaser in performing a transaction. The purchaser may also be provided with the option of accessing commercial software packages, such as "Shareware", provided on an external vendor database.

The purchaser is also provided with the option of obtaining a hard copy of the information displayed on any product information screen, and is able to perform a "screen-dump" or print instruction to the ATM printer.

The system software also includes driver's for producing a number of help screens which provide the purchaser with instructions regard navigation through the system software, and the procedures for selecting transaction options.

The system software also includes a number of message interrupt procedures whereby the purchaser can be provided with information having a bearing on the successful completion of the transaction, regardless of the menu displayed on the screen. For example, if the ATM network were to fail while the purchaser is inputting transaction options via a menu, an interrupt procedure will display the message " Network failure - transaction aborted" in a window that is superimposed over the current menu.

Figure 14(a) to Figure 14(h) show flow charts illustrating the sequence

of transaction options which are presented in menu format to a purchaser performing a transaction. Again merely for illustrative purposes, the transaction options for placing a bet, purchasing a share, purchasing a unit trust, purchasing an entertainment ticket, purchasing a travel ticket, purchasing a futures contract or purchasing an insurance policy are shown.

As an alternative to the menus shown in the previous examples, wherein selections are made by pressing physical keys located along the periphery of a screen, Figure 15(a) and Figure 15(b) show examples of icon-driven menus which may be used to exercise transaction options. It is envisaged that the screens of current ATM could be replaced by so-called "touch screens" which allow a purchaser simply to touch an appropriate icon displayed on the screen. The screen then senses the location of contact between a purchaser's finger and the screen, and in this way will determine the menu selection made by a purchaser. Icon-driven menus may be particularly attractive to encourage unsophisticated persons to perform transactions using the transaction system 10, as the various options can be displayed in a simple and easily understandable manner.

An alternative method by which a purchaser can exercise transaction options is shown in Figures 16(a) and (b). The ATM depicted in Figure 16(a) is provided with an additional optical card reading device 72, which is intended to receive one of the cards illustrated in Figure 16(b). To exercise various options relating to a transaction, the purchaser simply marks the appropriate blocks on a transaction card 74, which is then fed into the optical card reading device 72. The selected

transaction options are then displayed on the screen of the ATM. After confirmation of these options, the transaction system 10 will proceed to process the transaction, and debit and credit the necessary accounts. Before dispensing a transaction card 74, the card reading device 72 will also mark the card, by either punching a hole or printing an appropriate indicium of the card. A card so marked is then regard as proof of conclusion of the transaction between the relevant vendor and purchaser.

It is envisaged that the banks, vendors, updating system operators and ATM network operators will be able to derive either direct or indirect benefits from the installation of the transaction processing system 10. For example, the banks will benefit from increased use of ATM's and banking services. Furthermore, by charging a transaction fee on each transaction performed on the transaction system 10, the banks will be able to generate substantial fees. The ATM network operators, such as Saswitch or Multinet, will additionally be able to charge a service fee for each transaction performed, and in this way generate revenue. Finally, the vendors will benefit from increased trading and sales that are performed on the transaction system 10, and may also charge a service fee for each transaction that utilizes their vendor database 24.
The various service and transaction fees are credited directly to the accounts of the various service providers on conclusion of a particular transaction.

While "home shopping" via computers is known, the problem with such systems is that a large percentage of the population do not have access to personal computers on which purchases can be made in this way. The widespread distribution of ATM's throughout South Africa has the result

that ATM's are accessible to a large percentage of the population, particularly in urban areas. It is envisaged that, through the transaction processing system 10, a large percentage of the population will have access to the convenience and speed of purchasing products via a computer. ATM's included in the system 10 also allow purchasers to conduct transaction at any time of the day or night without the need for carrying or producing cash. Finally, the system 10 can be implemented using current ATM's and ATM networks, and will not require a large capital layout.

CLAIMS

1. A method of conducting a financial transaction between a purchaser and a vendor of a product or service, the method including the steps of:

- providing a computerized banking system including a plurality of financial institutions; each of said plurality of financial institutions comprising a computer centre comprising a plurality of computer based client accounts, an electronic data network interconnecting said computer centres; and a plurality of data exchange terminals connected to the said network;
- providing at least one vendor database including product or service related information connected to said network;
- providing product or service related information to the purchaser via one of said terminals;
- communicating to the vendor database via the network product or service related information regarding a product or service required by the purchaser and which information is provided by the purchaser via one of said terminals; and
- initiating payment by the purchaser for the product or service in an amount equal to the value of the transaction.

2. A method of conducting a financial transaction between a purchaser and a vendor of a product, the purchaser and the vendor being associated with respective first and second accounts held at respective first and second financial institutions, the method comprising the steps

of:

- providing at least one vendor database including product-related information;
- linking a data exchange terminal to the at least one vendor database via a data network linking said first and second financial institutions;
- obtaining transaction-related information regarding a product required from the purchaser via the terminal;
- communicating the transaction-related information via the network to the vendor database; and
- initiating an electronic transfer of funds from the first account to the second account for the value of the transaction.

3. A method according to claim 2 wherein the first and second financial institutions comprise the same financial institution.

4. A method according to claim 2 wherein the transferring of funds electronically involves debiting the first account and crediting the second account.

5. A method according to any one of the preceding claims including the step of obtaining an access code from the purchaser to verify authorization of the transaction.

6. A method according to any one of claims 2 to 4 wherein the funds are transferred electronically between the first and second accounts in real time response at the conclusion of the transaction.

7. A method according to any one of claims 2 to 4 wherein the funds are transferred electronically between the first and second account at a predetermined future time.

8. A method according to any one of the preceding claims wherein the terminal includes display means, and the method includes the step of displaying at least one enquiry menu on the display means to obtain transaction-related information from the purchaser.

9. A method according to claim 8 including the step of incorporating icons associated with options relating to the transaction into the at least one enquiry menu so that the purchaser is able to provide the transaction-related information by selecting an icon displayed on the display means.

10. A method according to claim 8 or claim 9 including the steps of displaying at least part of the product-related information on the display means, and updating the product-related information in real time response or on the occurrence of a transaction between the purchaser and the vendor.

11. A method according to any one of claims 2 to 10 wherein the transaction-related information includes at least product identification information, the value of the transaction and details of the first account to or from which funds are to be electronically transferred.

12. A method according to any one of claims 2 to 11 including any one or more of the steps of verifying the availability of funds in the first account, the availability of the vendor product or the qualification of the purchaser to perform the transaction before conclusion of the transaction.

13. A method according to any one of the preceding claims including the step of printing a record of the transaction which serves as proof of the transaction.

14. A method according to any one of the preceding claims including the step of reading indicator means at the terminal, the indicator means being configurable by the purchaser to indicate the transaction-related information.

15. A method according to any one of claims 2 to 14 including the step of incorporating the transaction-related information into a statement issued by the first or second financial institution to the purchaser or vendor.

16. A method of conducting a financial sales transaction between a purchaser and a vendor of a product substantially as herein described with reference to any one of the accompanying drawings.

17. A system for conducting a financial transaction between a purchaser and a vendor of products or services, the system including:

- a computerized banking system including;
- a plurality of financial institutions;
  - each of said plurality of financial institutions including a computer centre including a plurality of computer based client accounts;
  - said computer centres being interconnected by an electronic data network;
  - a plurality of data exchange terminals connected to said electronic data network;
- at least one vendor database comprising product or service related information connected to said network; and
- system software providing, via the network, communication of the product or service related information between said plurality of data exchange terminals and said at least one vendor database, and for initiating payment by the purchaser for products or services purchased from said vendor database.

18. A system for conducting a financial transaction between a purchaser and vendor of a product, the purchaser and the vendor being associated with respective first and second accounts held at respective first and second financial institutions, the system comprising:

- a data exchange terminal including data input and output means;
- at least one vendor database including product-related information;
- communication means for linking the terminal to the at least one vendor database, the first financial institution and the second financial institution; and
- system software providing communication of product related information of a transaction between the terminal and the at least one vendor database and for transferring funds electronically between the first and the second accounts for the value of the transaction.

19. A system according to claim 18 wherein the first and second financial institution are the same financial institution.

20. A system according to any one of claims 17 to 19 wherein the data exchange terminal is a bank service terminal.

21. A system according to any one of claims 18 to 20 wherein the communication means comprises an ATM network to which the terminal, the at least one vendor database, and the first and second financial

institutions are linked to facilitate the communication therebetween.

22. A system according to any one of claims 18 to 21 wherein the system software facilitates the transfer of funds electronically between the first and second accounts in real time response at the conclusion of the transaction, or at a future predetermined time.

23. A system according to any one of claims 18 to 22 wherein the terminal, the first or second financial institution or the at least one vendor database have storage means for storing the product-related information, at least part of the system software or transaction records, and wherein the product-related information or the transaction records are accessible at the terminal.

24. A system according to any one of claims 18 to 23 including a portable storage device adapted to store product-related information and/or at least part of the system software and/or transaction records.

25. A system according to claim 24 wherein the portable storage device comprises a smart card.

26. A system according to any one of claims 18 to 25 wherein the product-related information is accessible via the data output means of the terminal and is updatable in real time or on the occurrence of a transaction between the purchaser and the vendor.

27. A system according to any one of claims 18 to 26 wherein the data output means of the terminal includes a screen, and the system software includes menu drivers for producing enquiry menus on the screen which the purchaser utilises to provide transaction-related information via the data input means of the terminal to the system.

28. A system according to claim 27 wherein the enquiry menus include icons associated with transaction options, and the purchaser is able to select a transaction option by selecting an icon using the data input means.

29. A system according to any one of claims 18 to 28 wherein the communication means includes conventional telephone lines or dedicated communication lines and interface means for allowing the at least one vendor database to communicate with the terminal utilizing established ATM message protocols.

30. A system according to any one of claims 17 to 29 wherein the terminal includes printing means for issuing a record of the transaction or a voucher which serves as proof of the transaction.

31. A system according to any one of claims 18 to 30 wherein the data input means of the terminal includes a reader for reading an indicator means configured by the purchaser to indicate transaction-related information.

32. A system according to claim 31 wherein the reader comprises an optical reading device, and the indicator means comprises a card configurable to visually indicate the transaction-related information.

33. A system for conducting a financial transaction between a purchaser and a vendor of products or services, the system including an electronic data network including a plurality of bank service terminals for use by a purchaser; at least one vendor database including product or service related information connected to said electronic data network and accessible from said terminals; and system software providing communication of product or service related information between said terminals and said at least one vendor database and for initiating payment by the purchaser through said electronic data network for products or services purchased.

34. A system for conducting a financial transaction between a purchaser and vendor of a product substantially as herein described with reference to any one of the accompanying drawings.

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SIGNED ON BEHALF OF SPOOR & FISHER
APPLICANTS PATENT ATTORNEYS

AMENDED COPY: DATED THIS THE 21ST DAY OF NOVEMBER 1997.

D M KISCH INC
PATENT ATTORNEY FOR APPLICANT

FIG 1

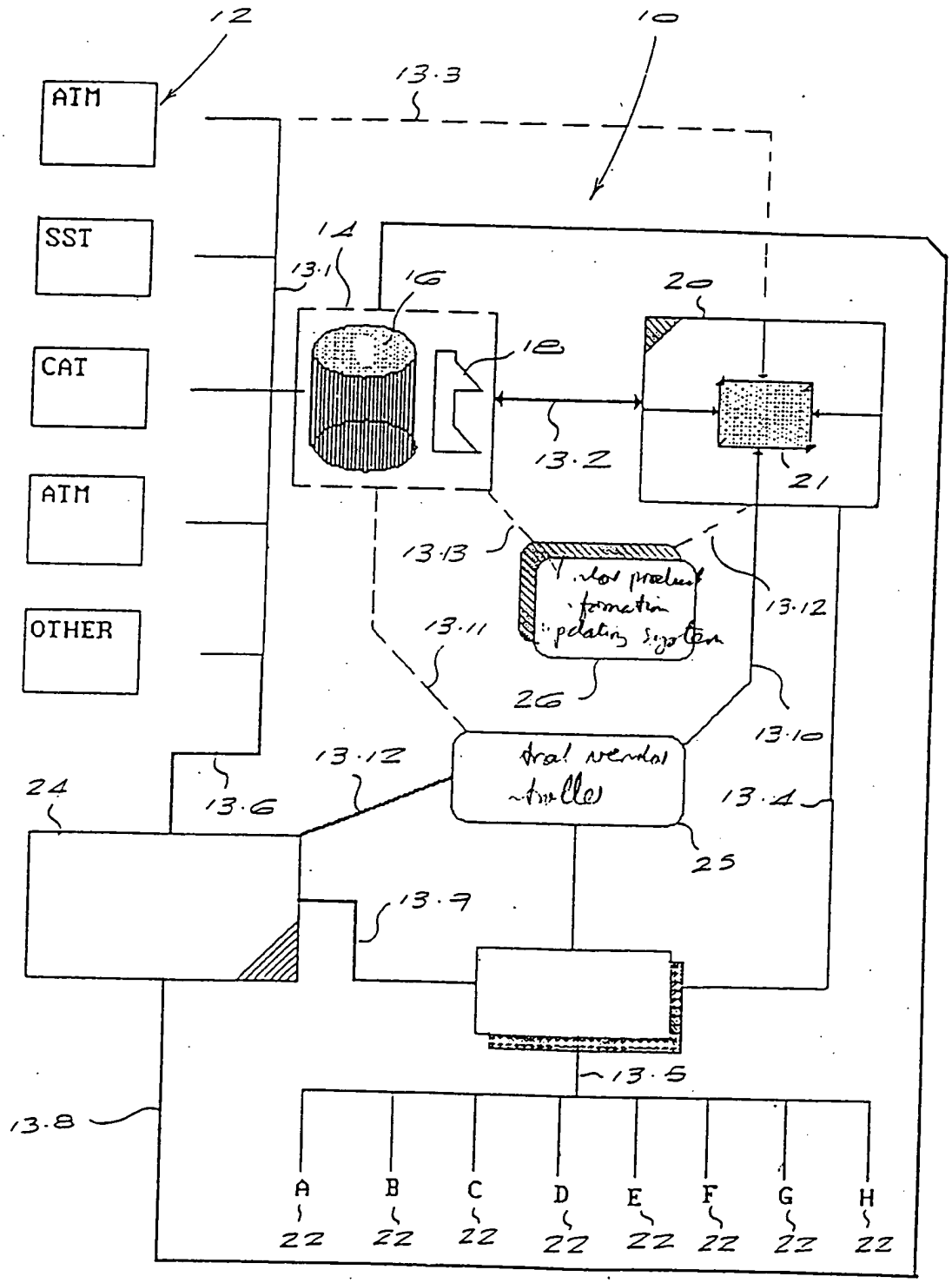

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FIG 2

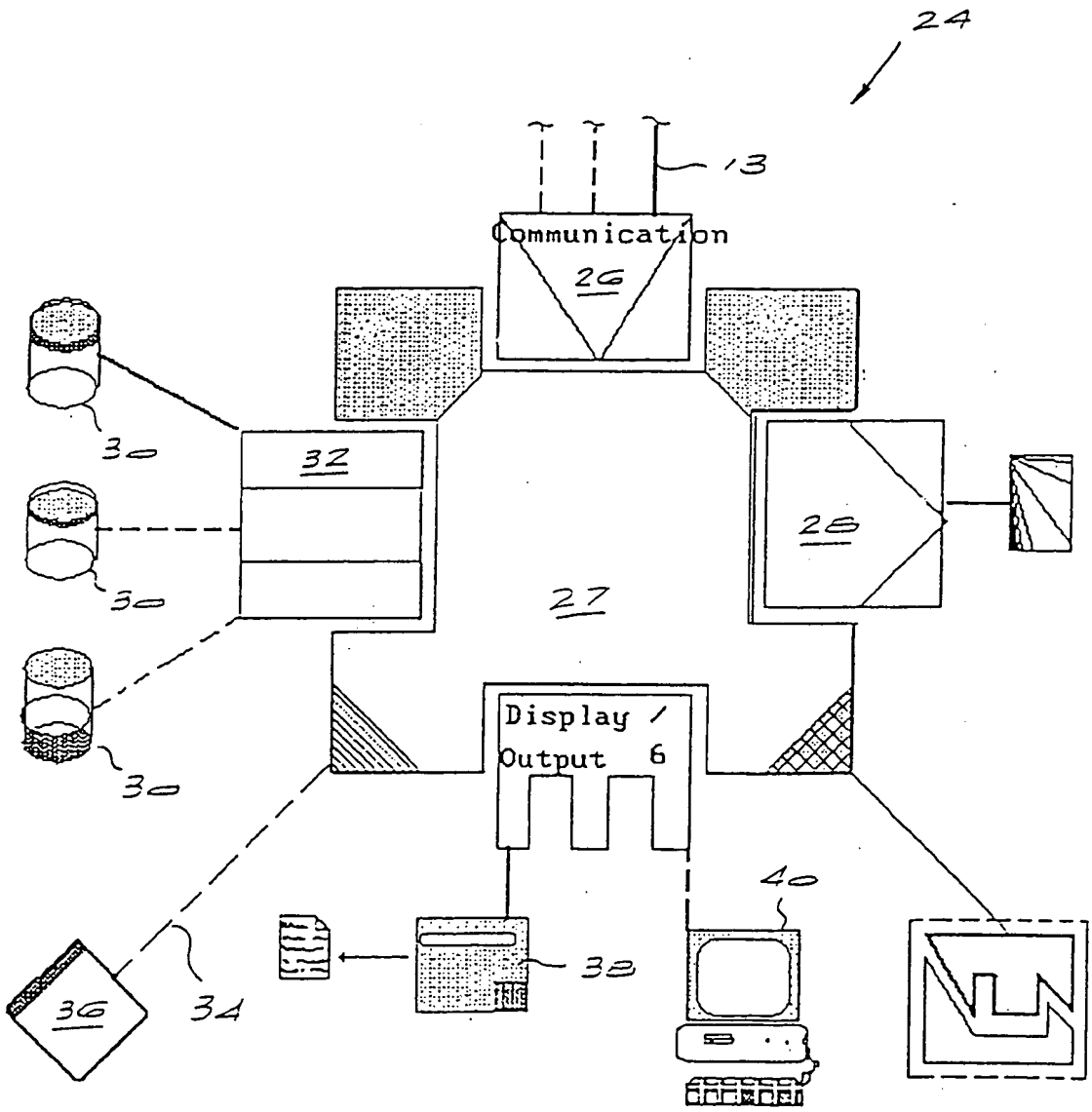
24
13
Communication
26
30
32
28
27
30
Display /
Output 6
30
40
38
36
34

FIG 3

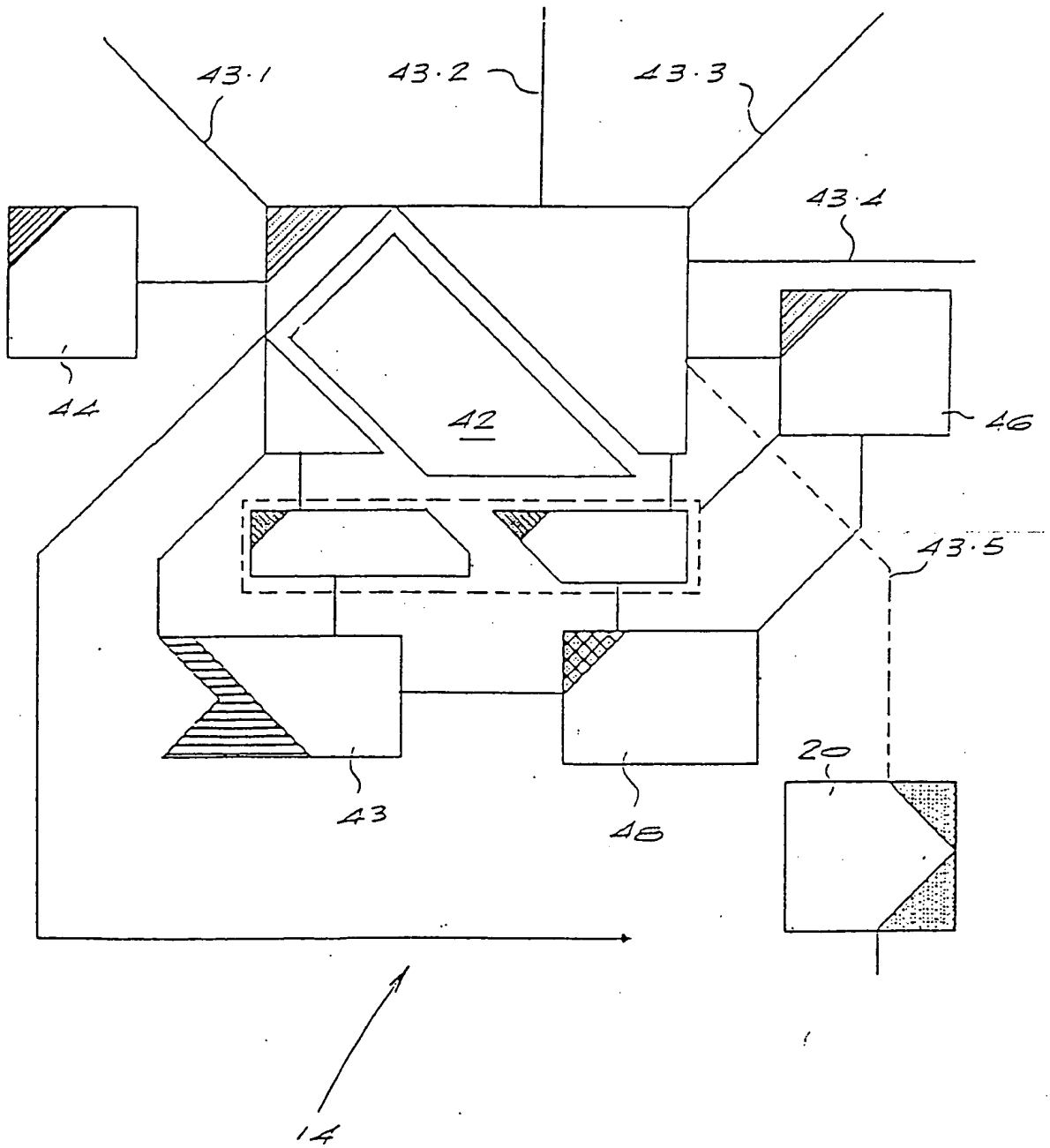

FIG 4

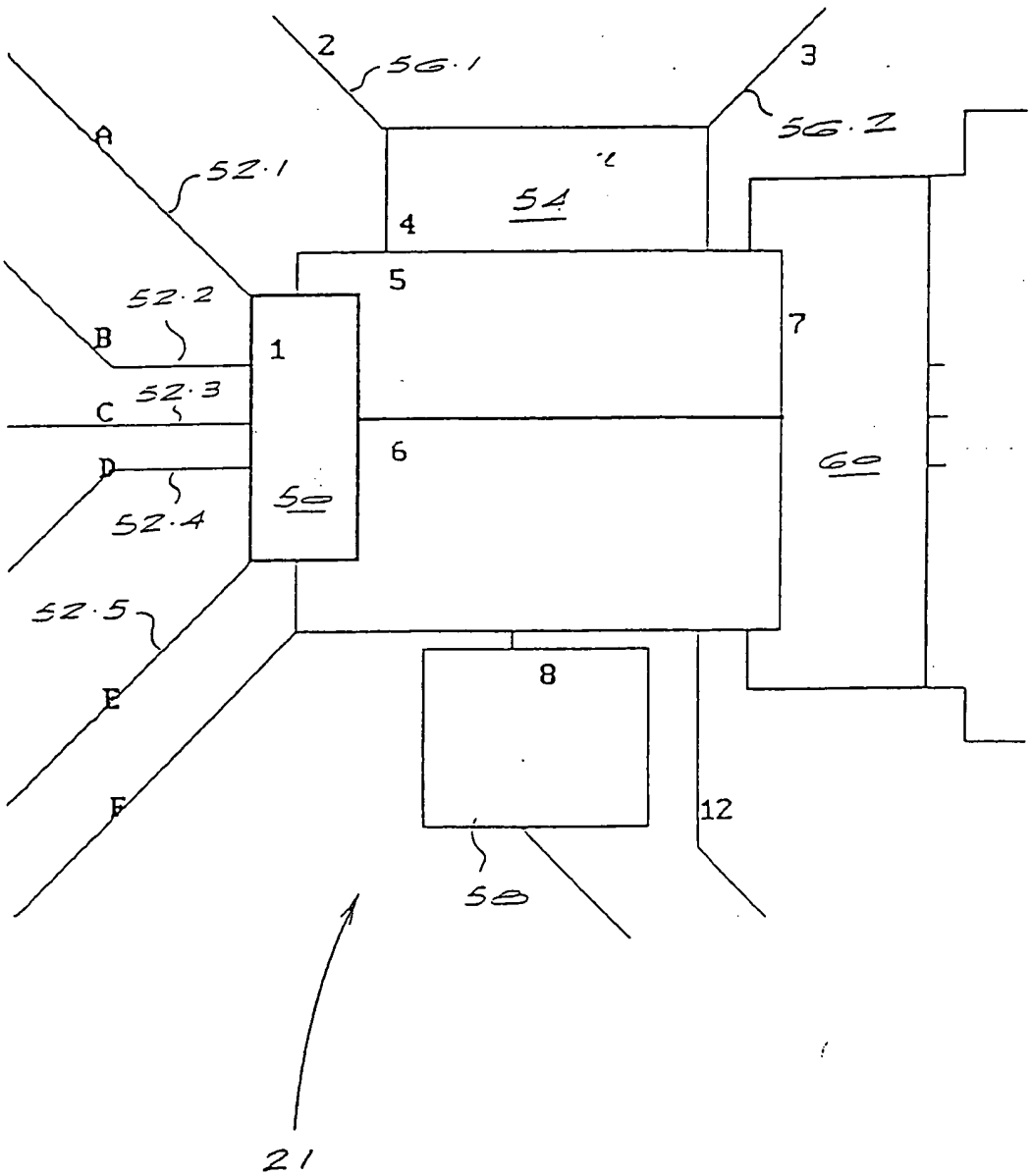

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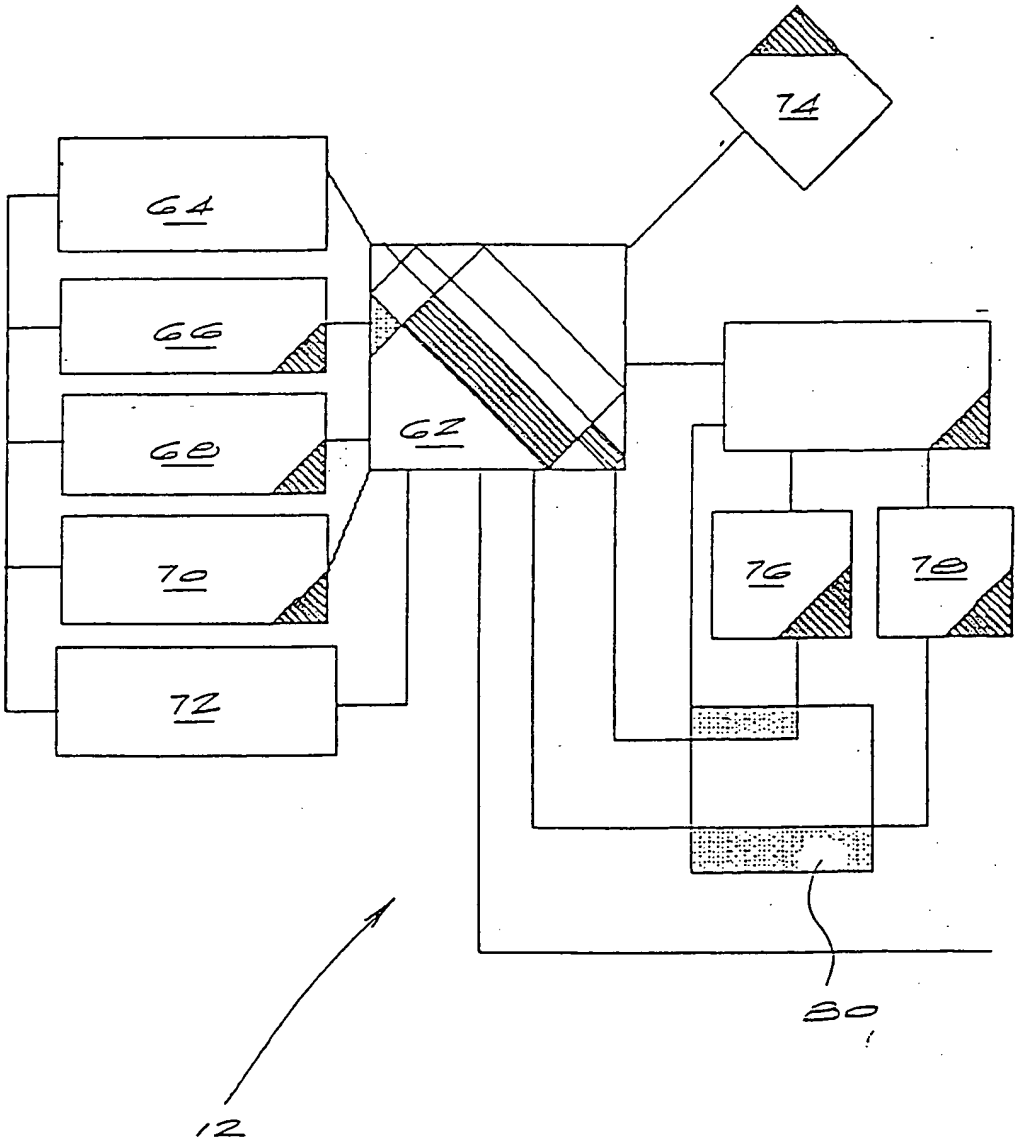
FIG 5



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See 6(a)

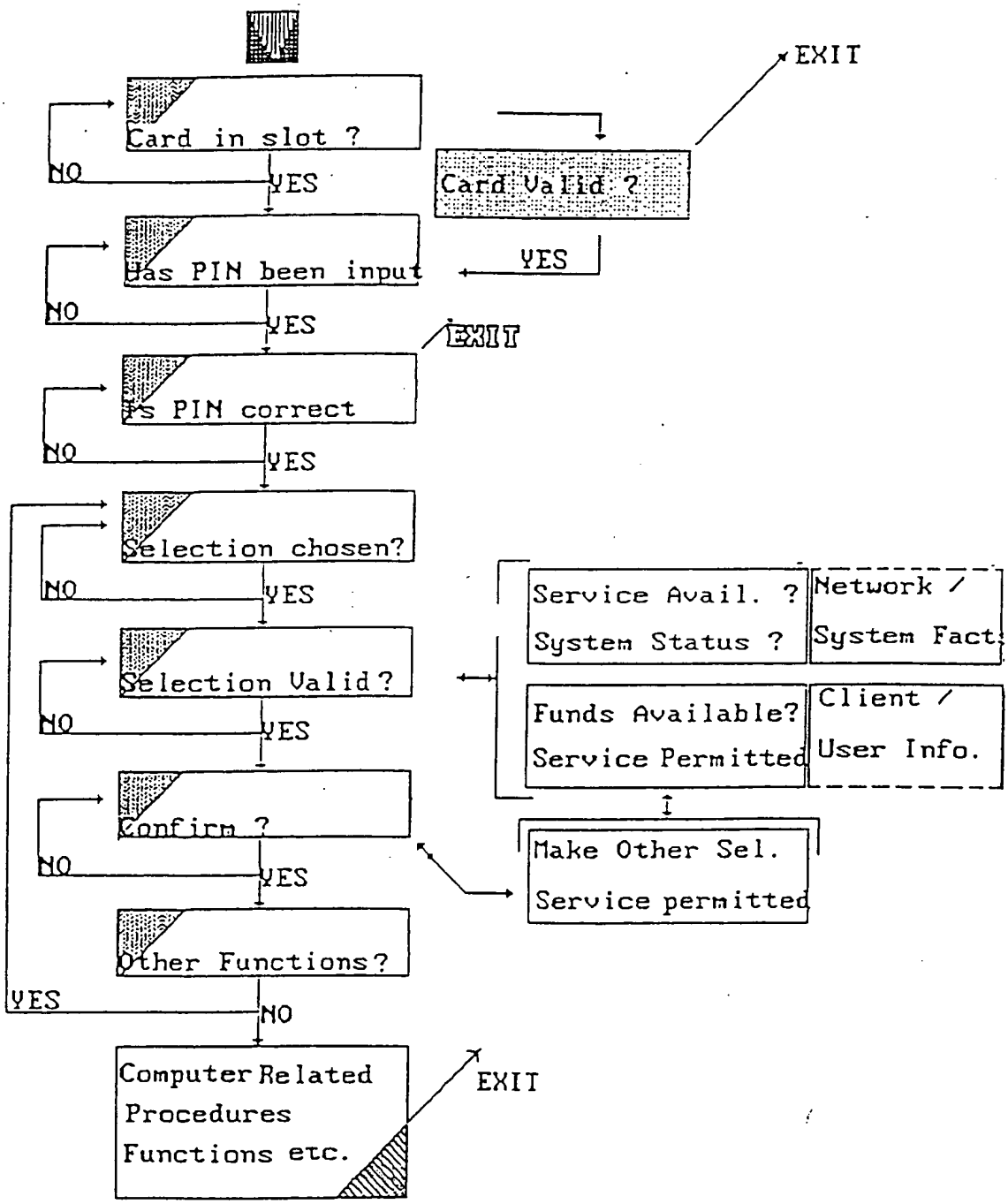

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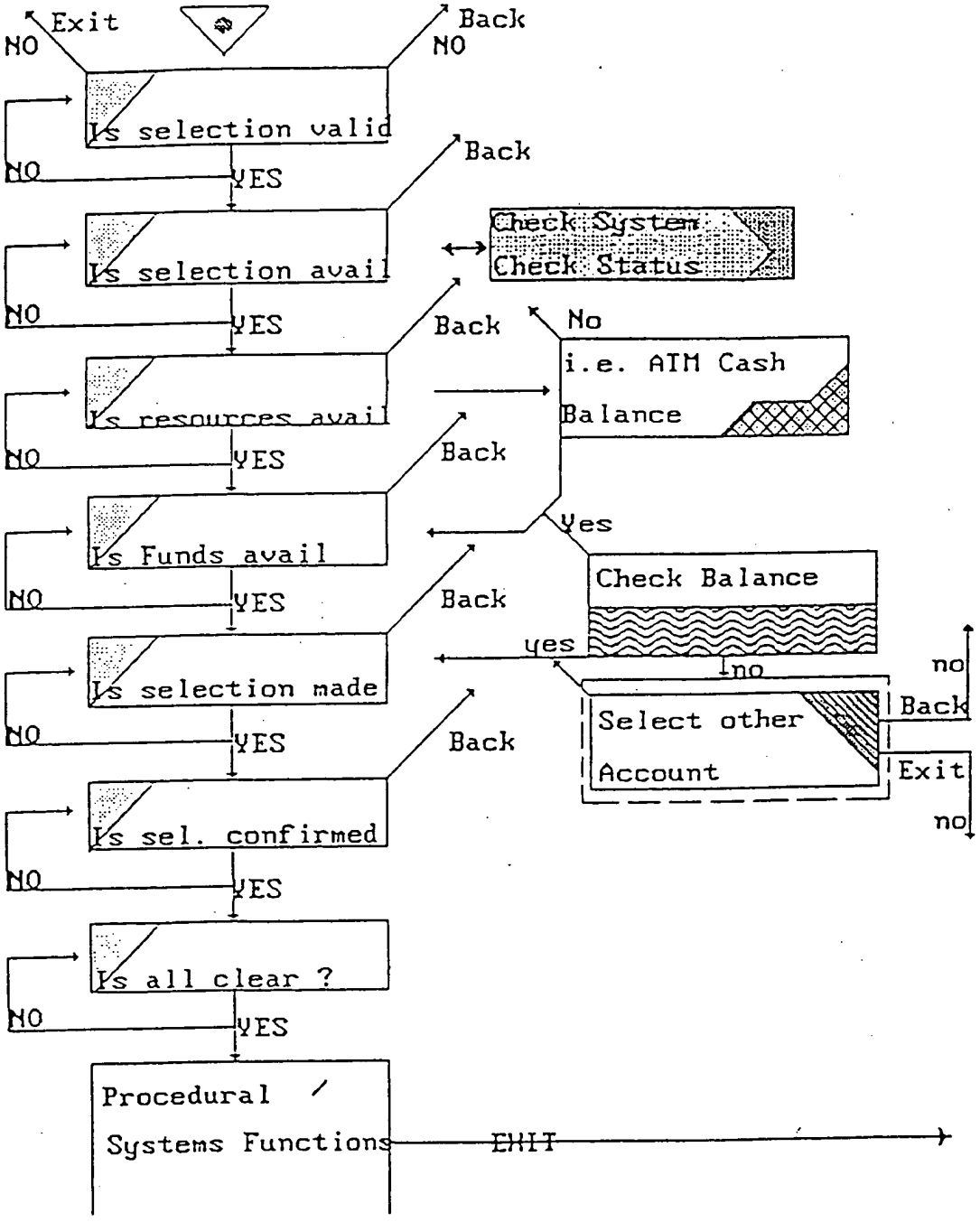
FIG 6(b)


Exit
NO
Back
NO
Is selection valid
NO
YES
Back
Is selection avail
Check System
Check Status
NO
YES
Back
No
Is resources avail
i.e. ATM Cash
Balance
NO
YES
Back
Is Funds avail
Yes
Check Balance
NO
YES
Back
yes
no
Is selection made
Select other
Account
Back
Exit
no
NO
YES
Back
Is sel. confirmed
NO
YES
Is all clear ?
NO
YES
Procedural
Systems Functions
EXIT

6(c)

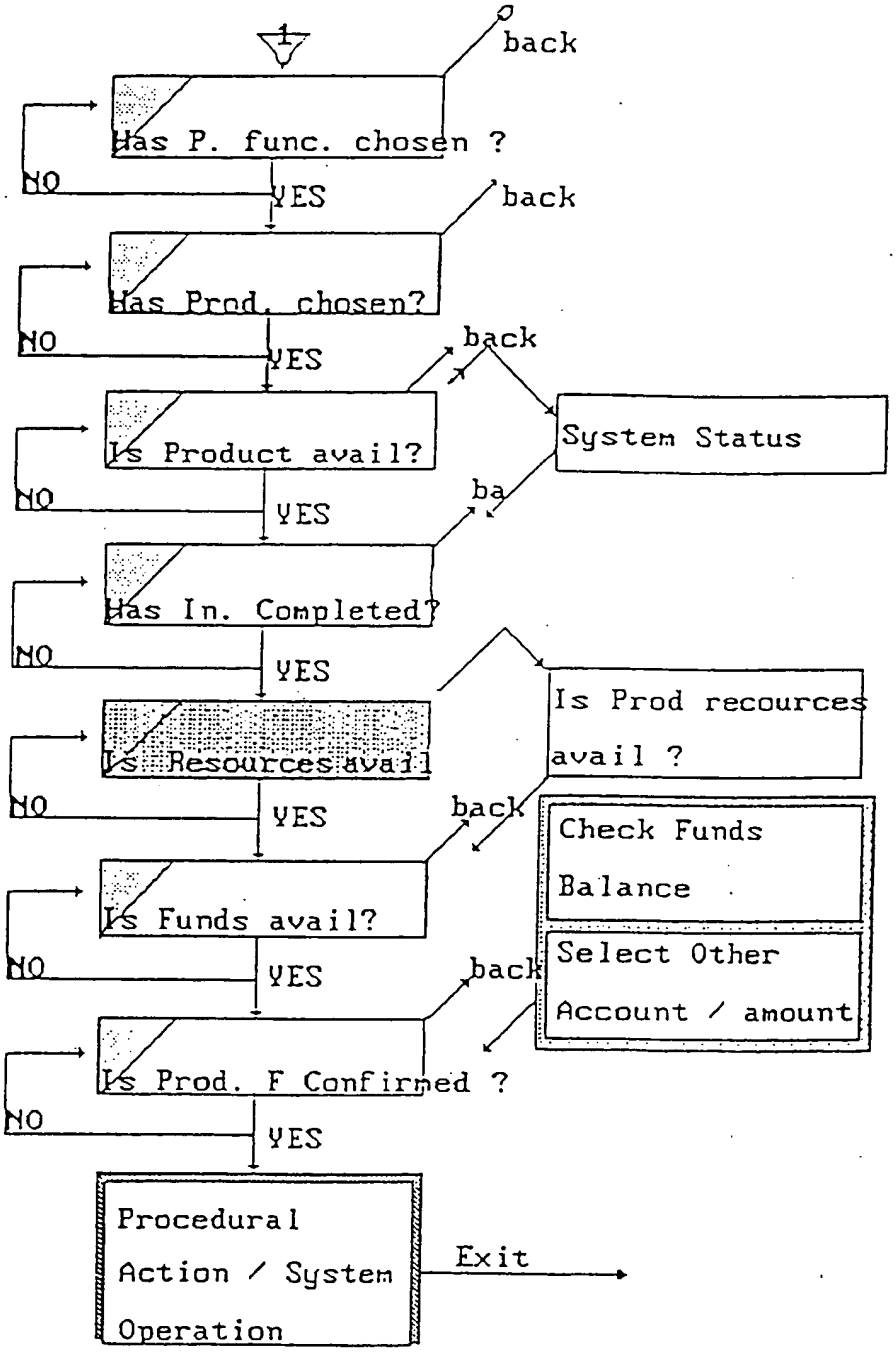

1
back
Has P. func. chosen ?
NO
YES
back
Has Prod. chosen?
NO
YES
back
Is Product avail?
System Status
NO
YES
ba
Has In. Completed?
NO
YES
Is Prod recources avail ?
Is Resources avail
NO
YES
back
Check Funds Balance
Is Funds avail?
Select Other Account / amount
NO
YES
back
Is Prod. F Confirmed ?
NO
YES
Procedural Action / System Operation
Exit

FIG 7

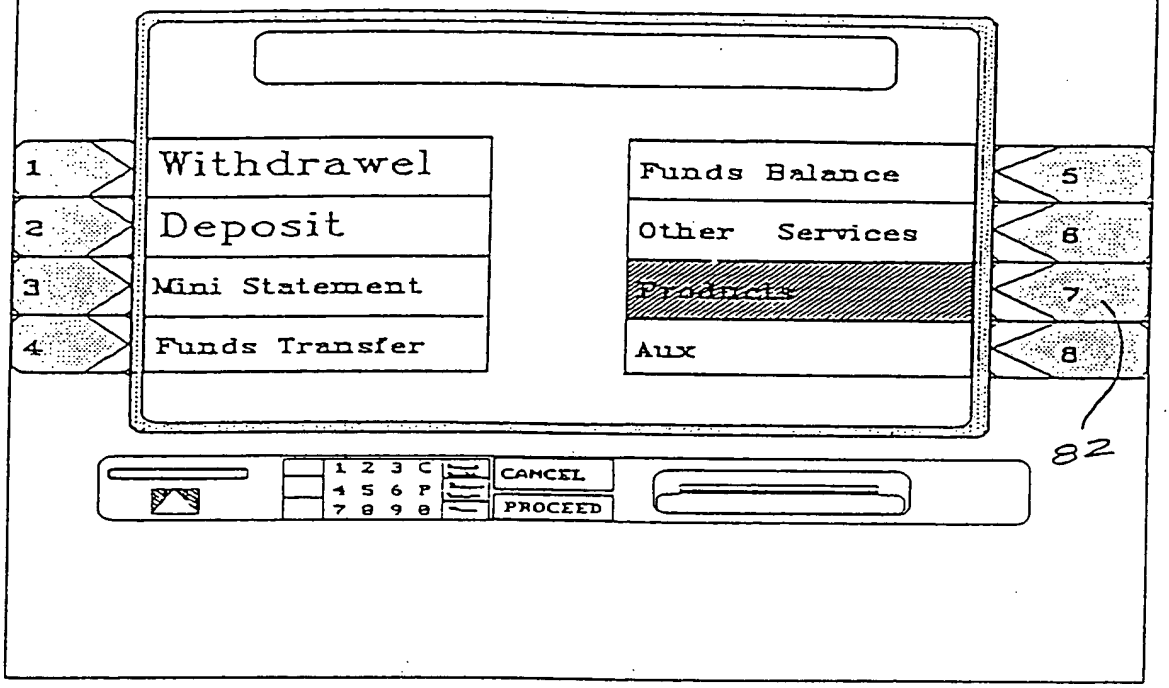


FIG 8

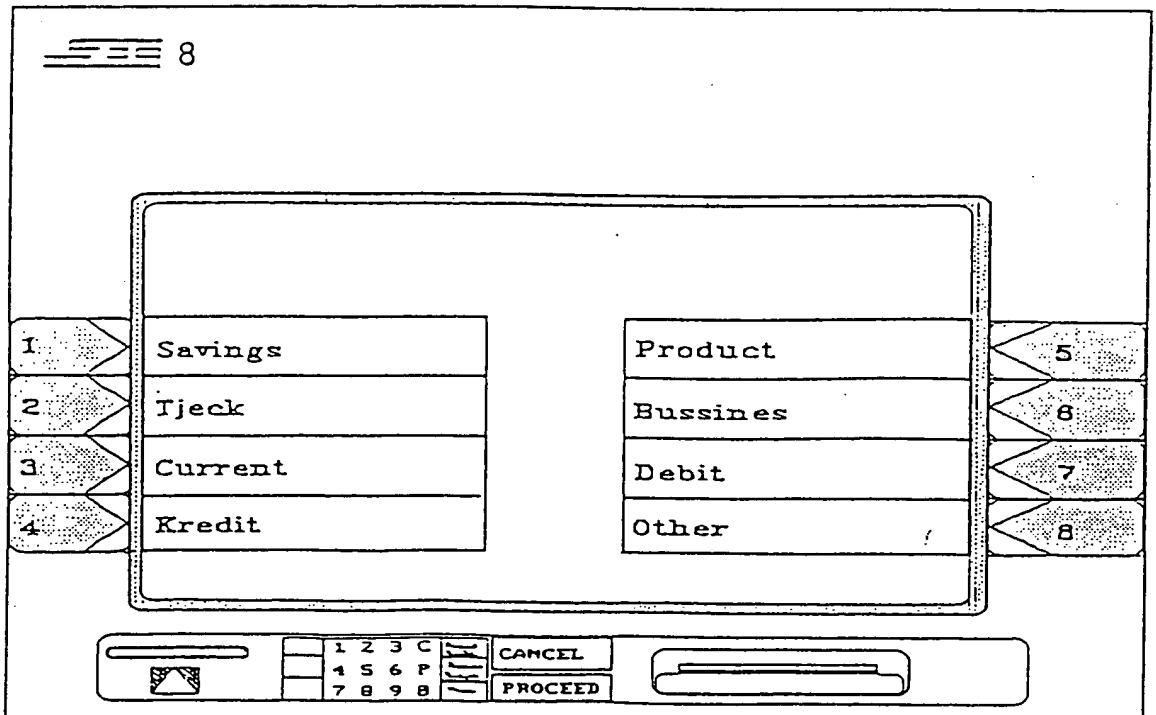


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FIG 9

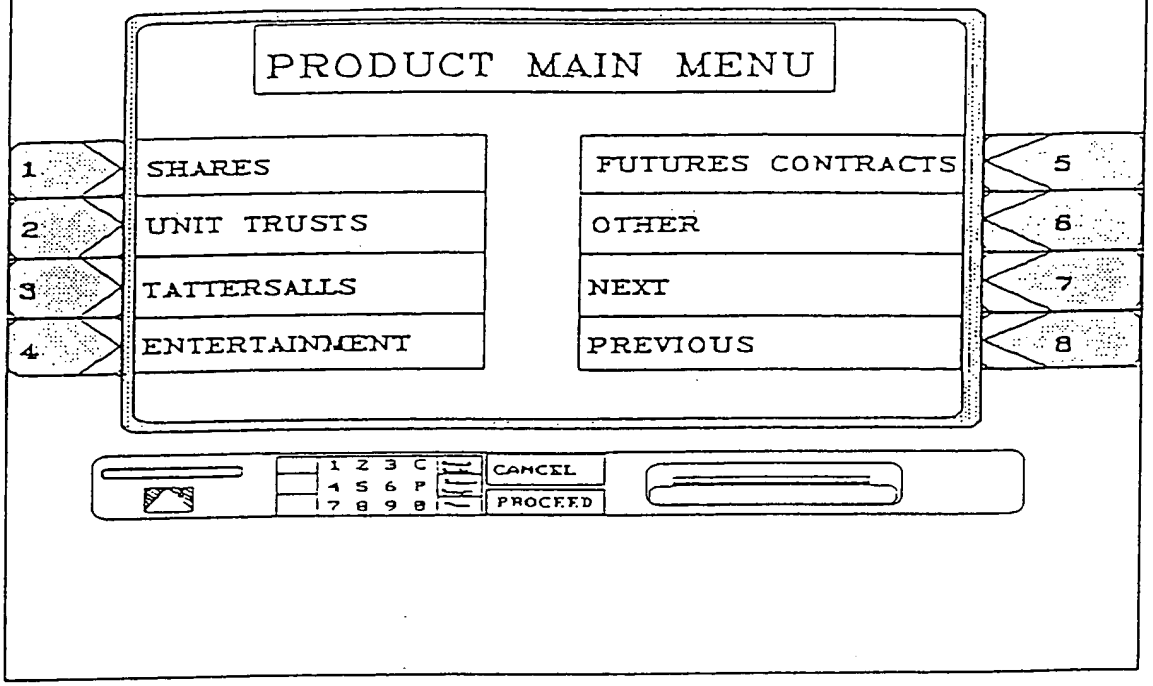
PRODUCT MAIN MENU
1
SHARES
2
UNIT TRUSTS
3
TATTERSALLS
4
ENTERTAINMENT
FUTURES CONTRACTS
5
OTHER
6
NEXT
7
PREVIOUS
8
1 2 3 C
4 5 6 P
7 8 9 B
CANCEL
PROCEED

FIG 10(a)

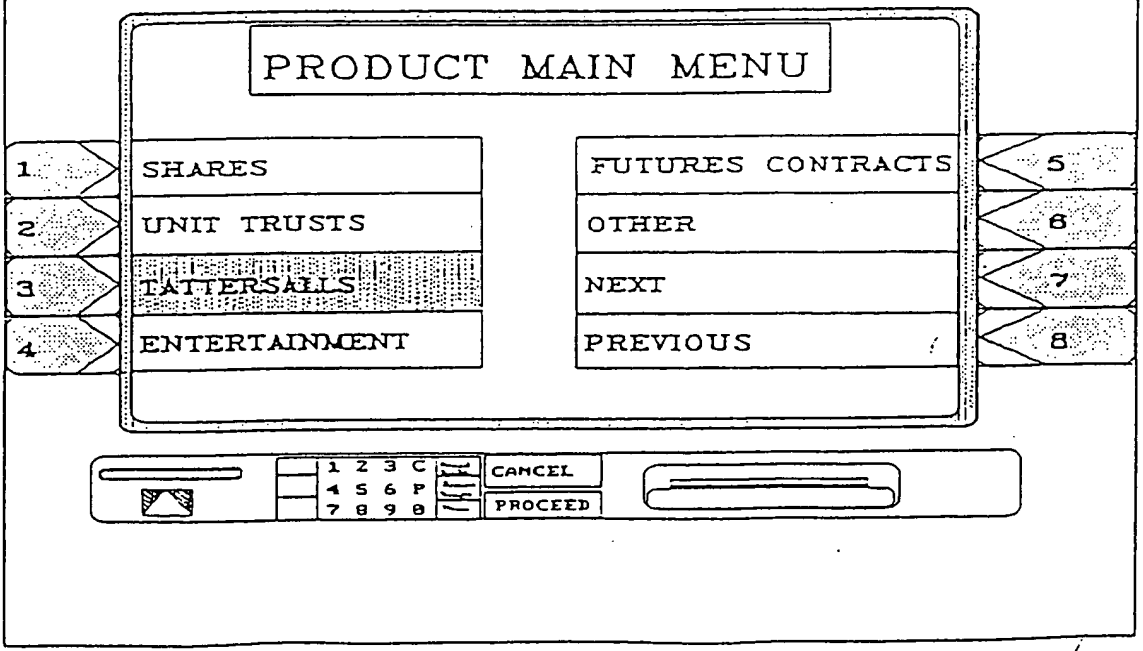
PRODUCT MAIN MENU
1
SHARES
2
UNIT TRUSTS
3
TATTERSALLS
4
ENTERTAINMENT
FUTURES CONTRACTS
5
OTHER
6
NEXT
7
PREVIOUS
8
1 2 3 C
4 5 6 P
7 8 9 B
CANCEL
PROCEED

FIG 10(b)

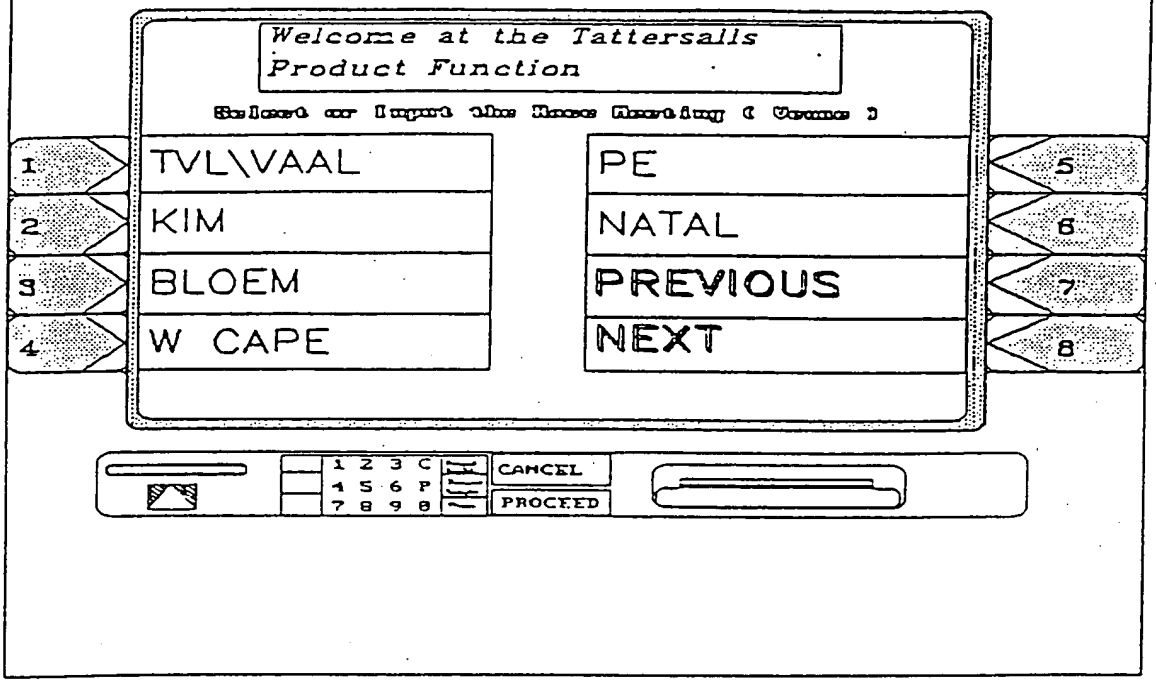

FIG 10(c)

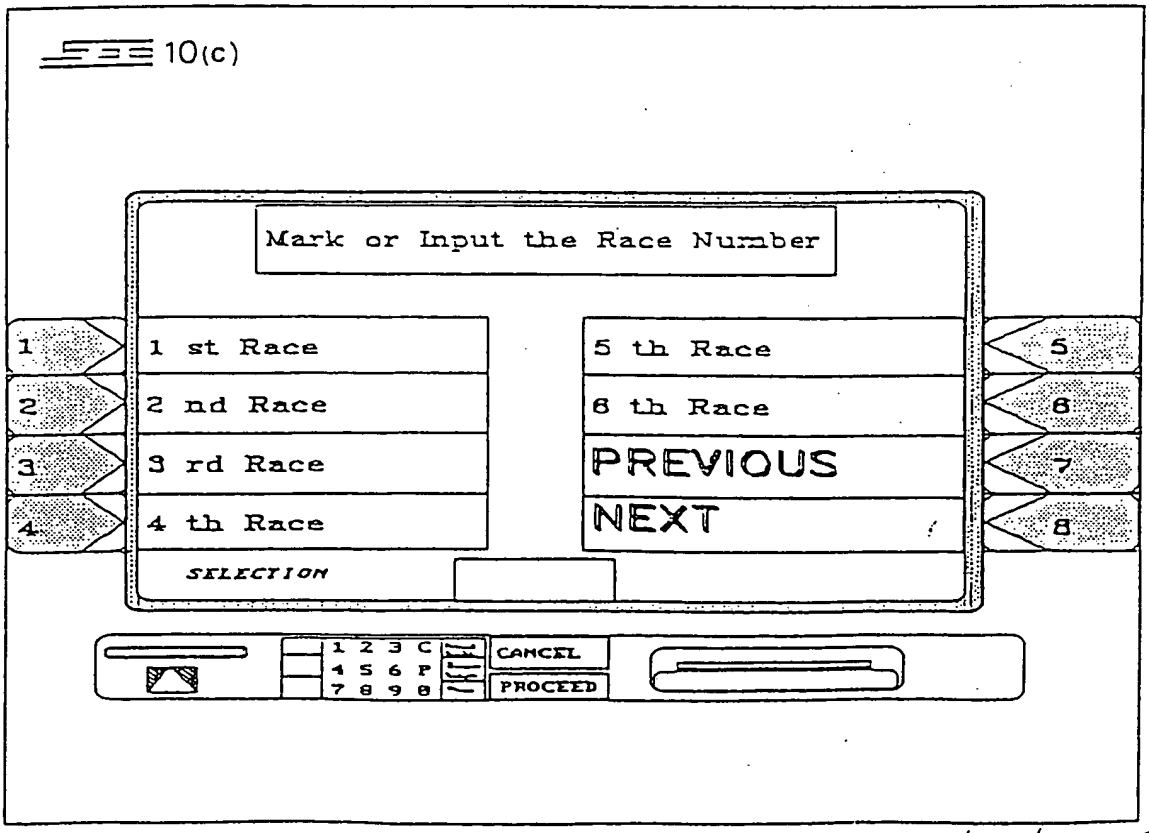

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FIG 10(d)

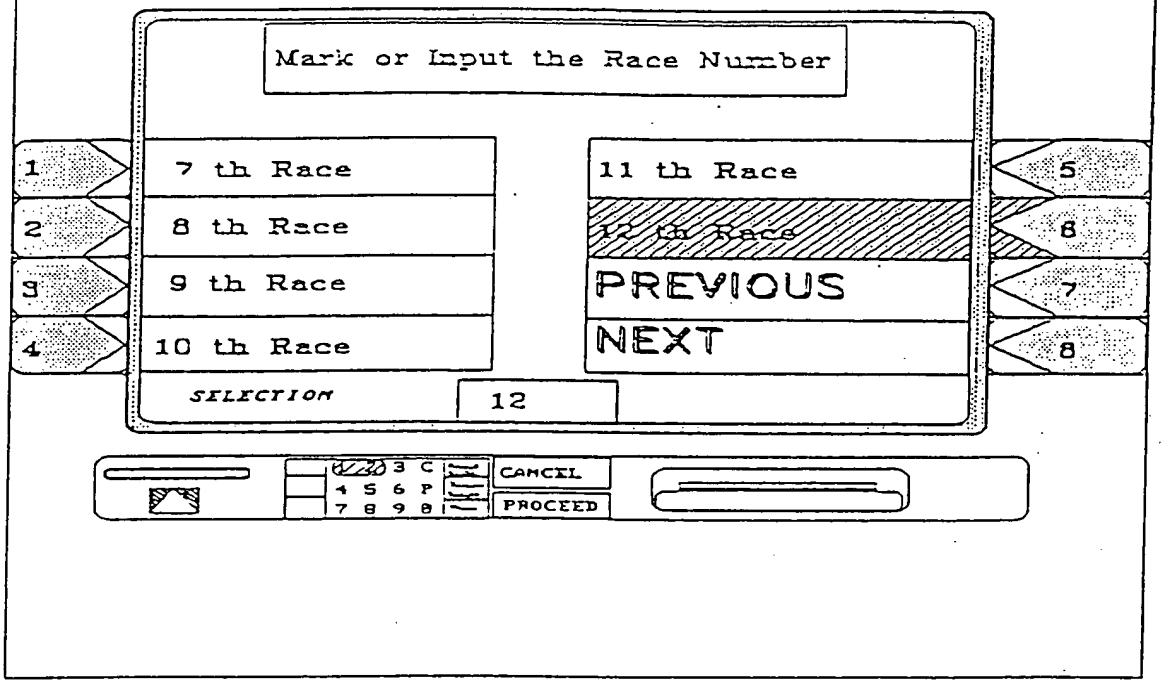

FIG 10(e)

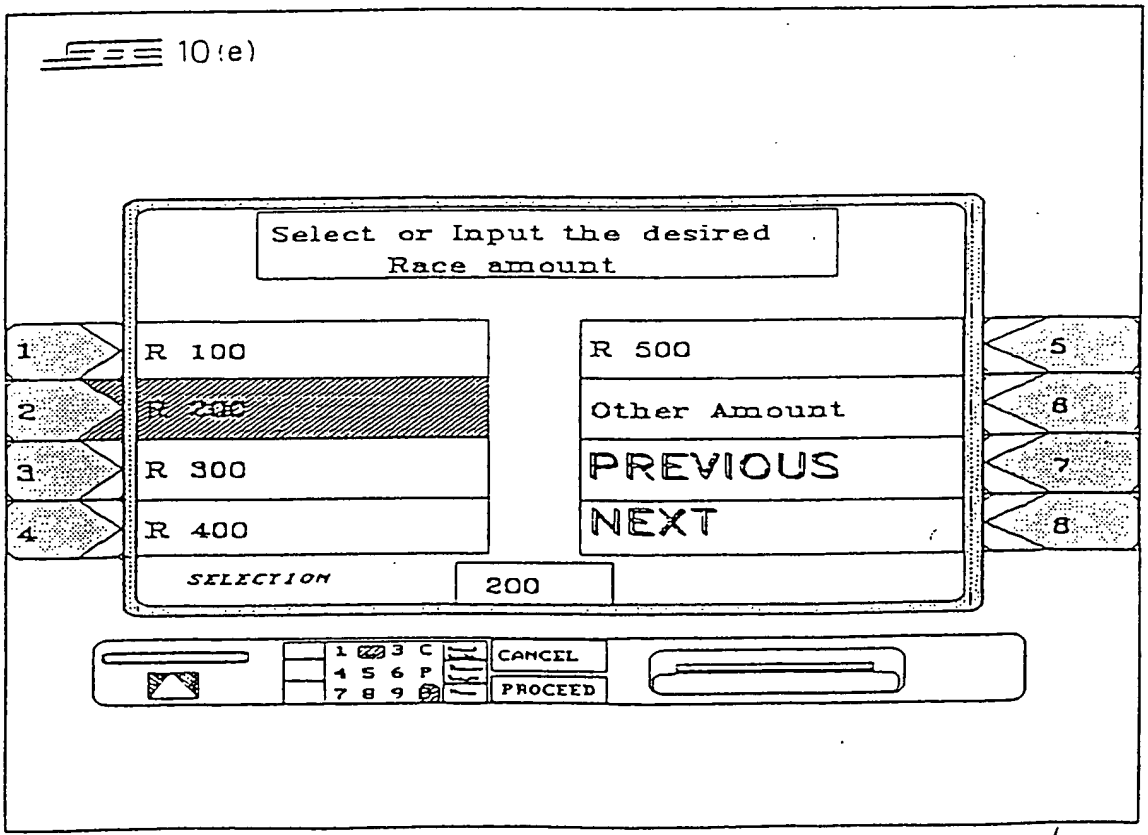

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FIG 10(f)

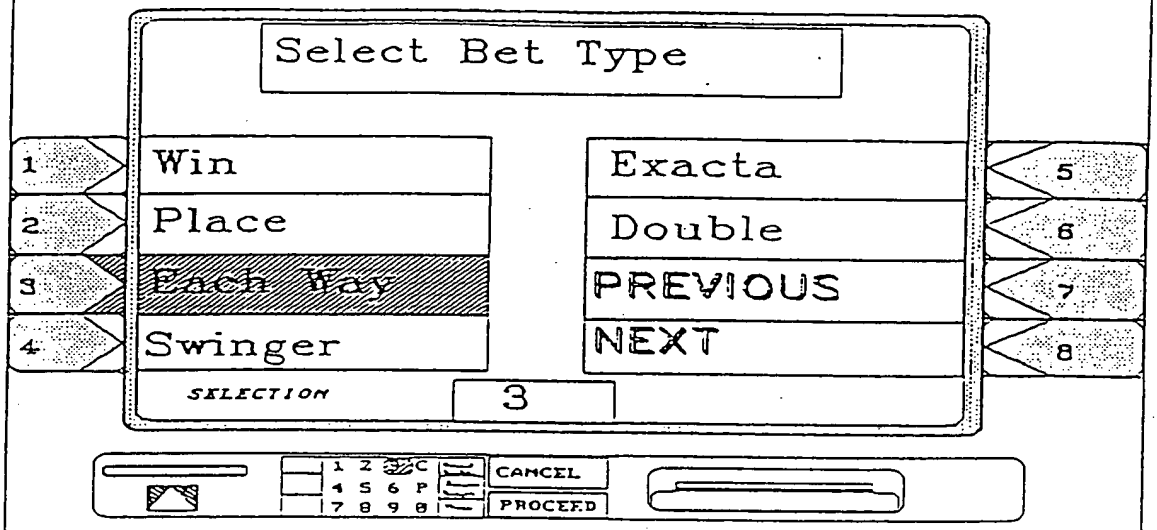

FIG 10(g)

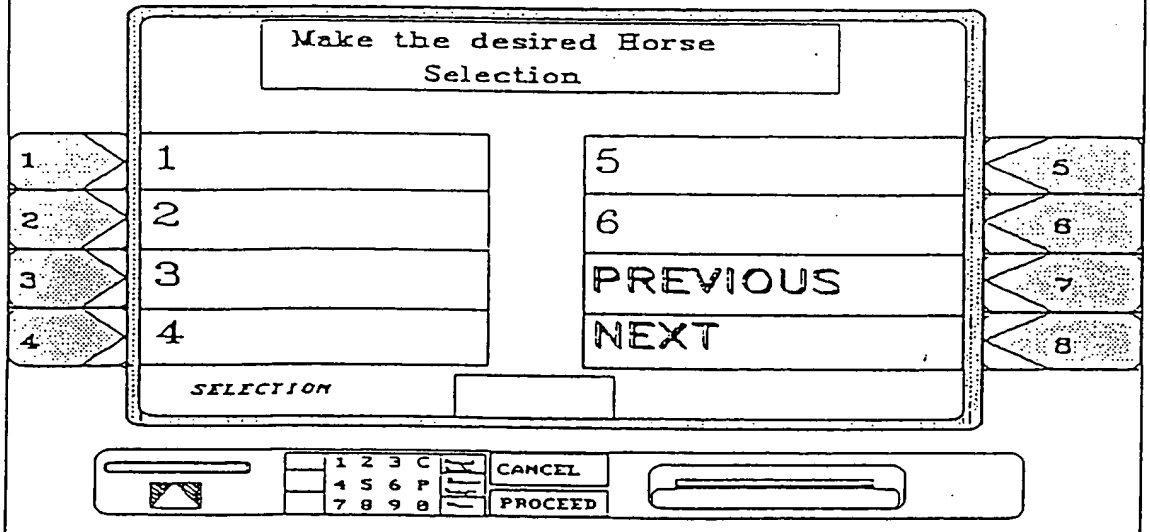

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FIG 10(h)

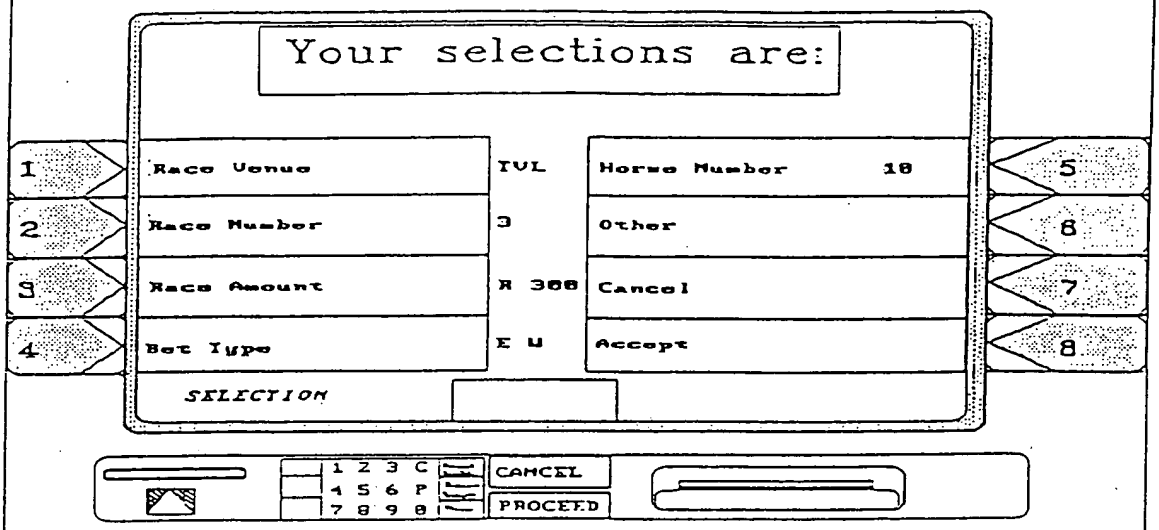

FIG 10(i)

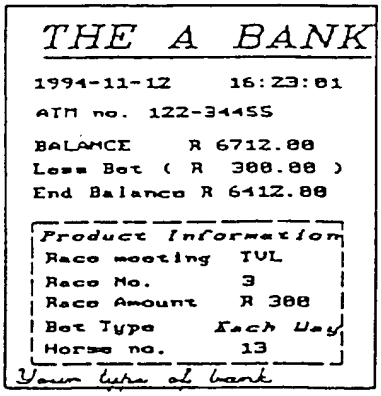

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FIG 11(a)

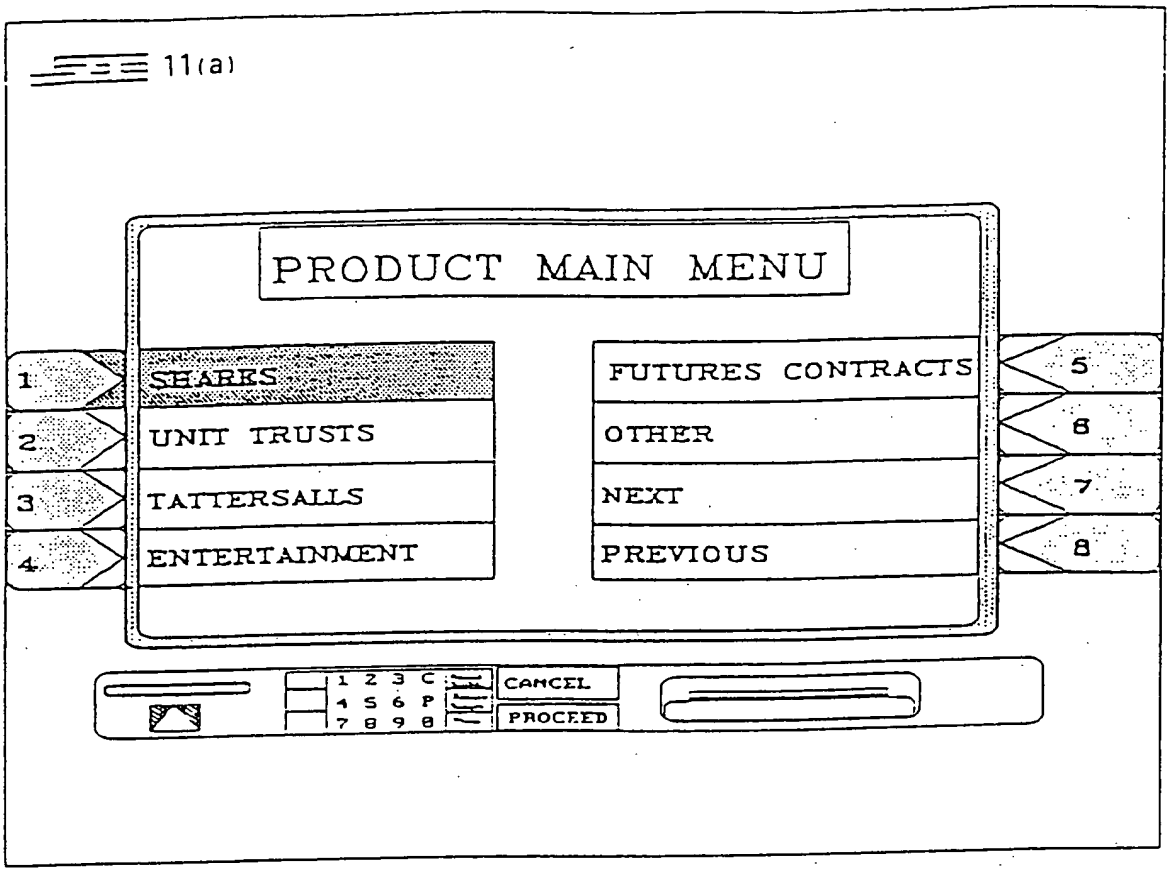
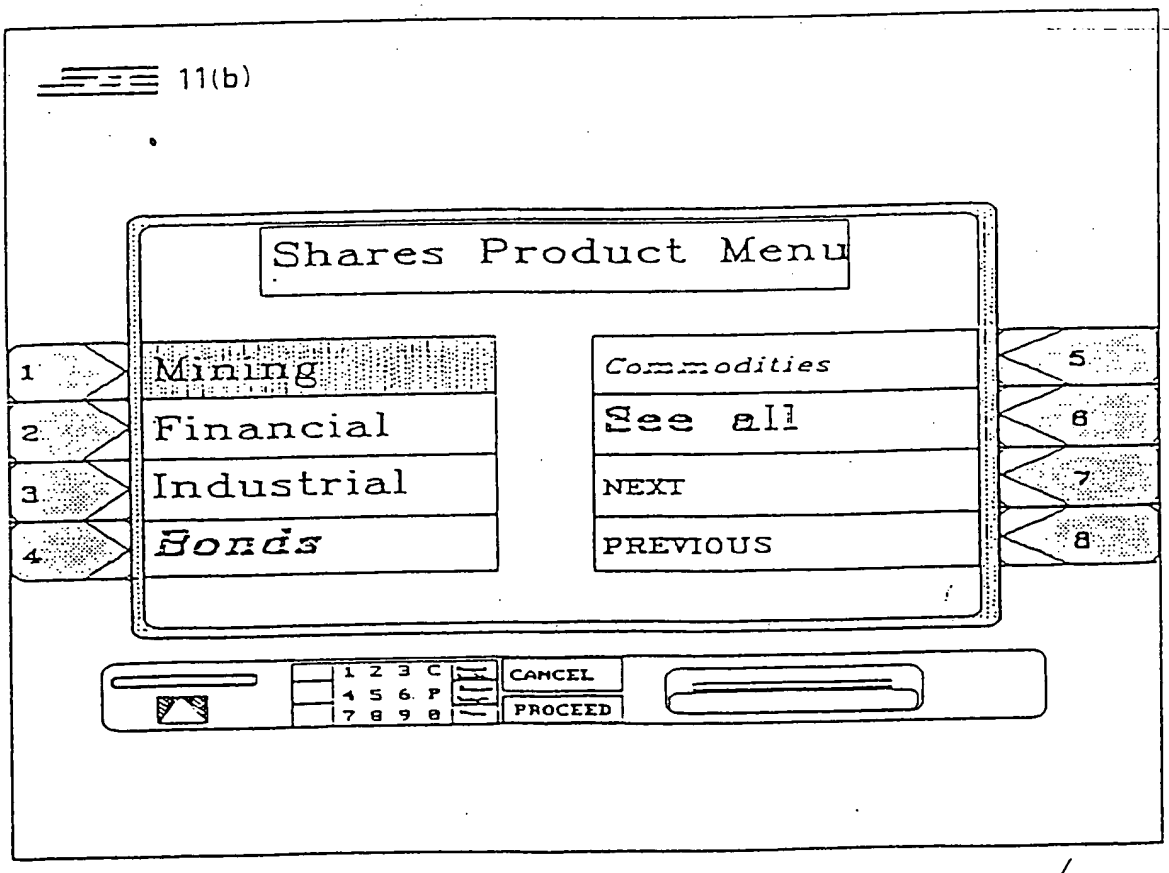


FIG 11(b)



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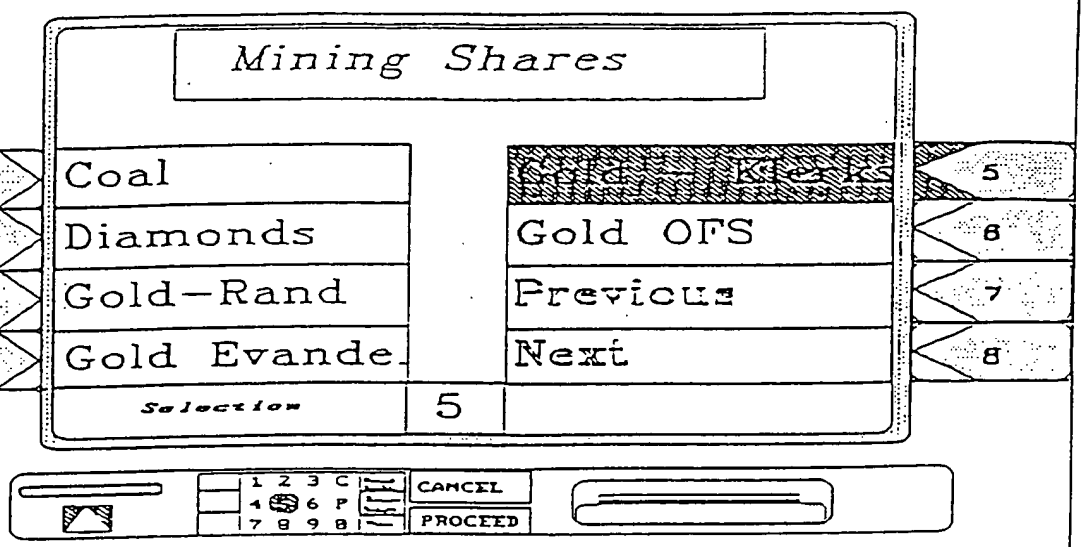
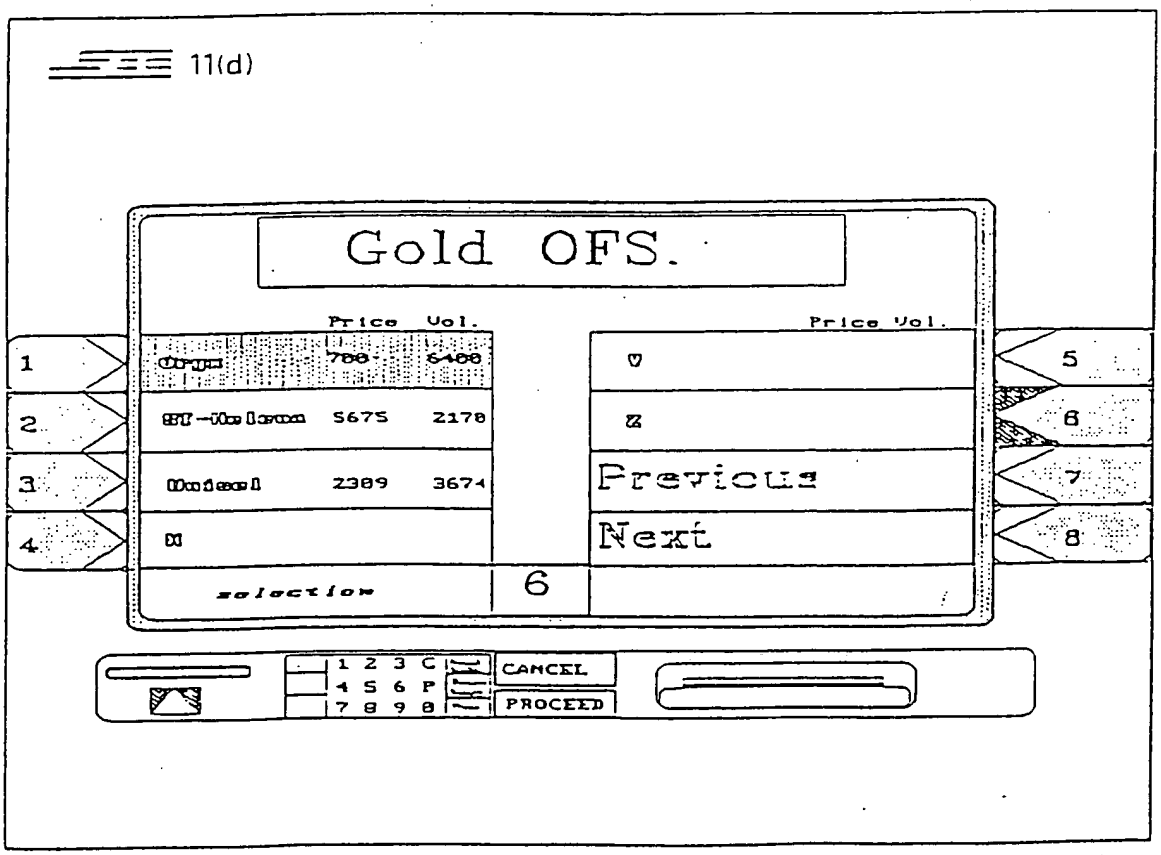
11(c)



11(d)



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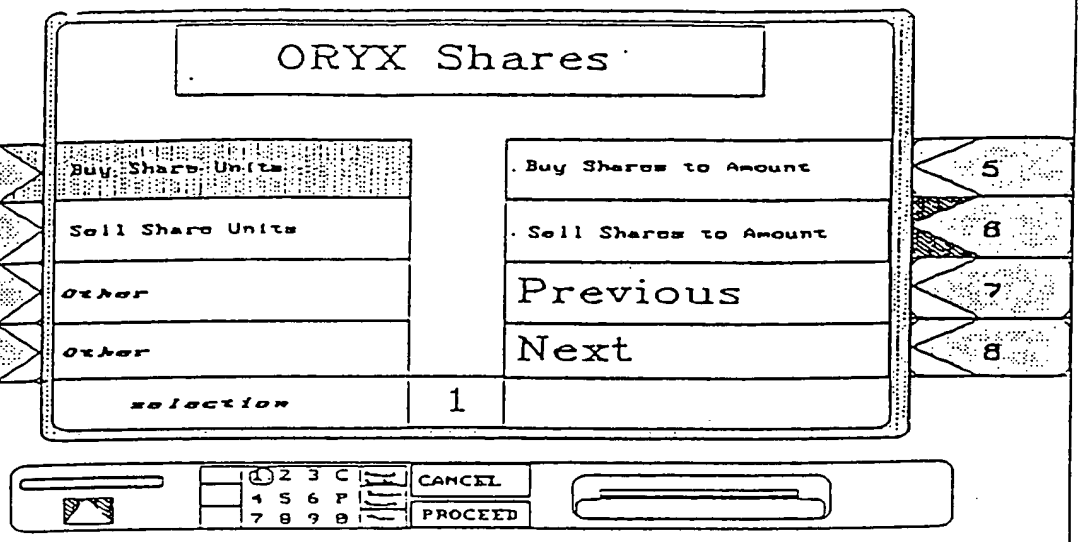
11(e)



11(f)

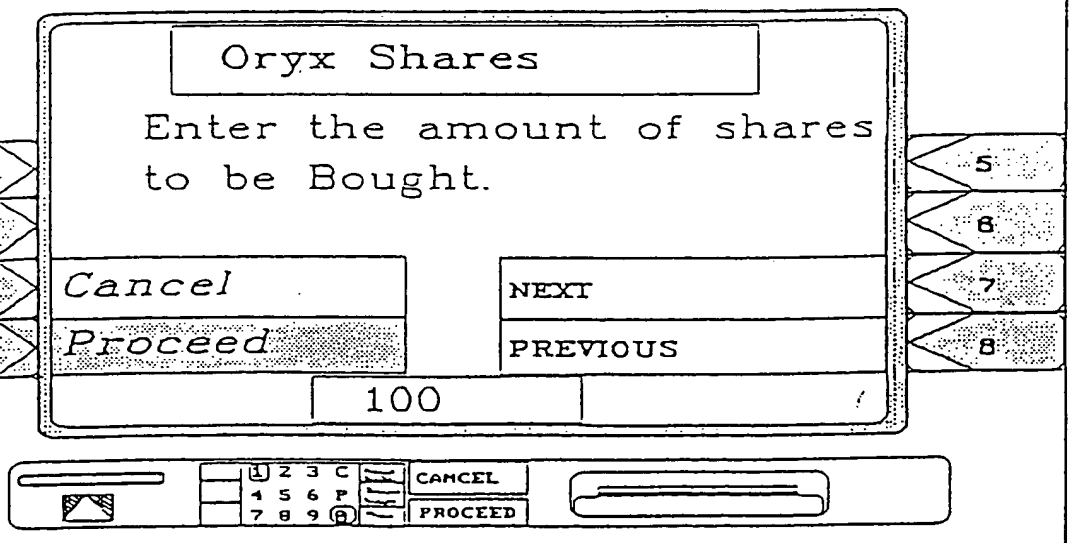


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FIG 11(g)

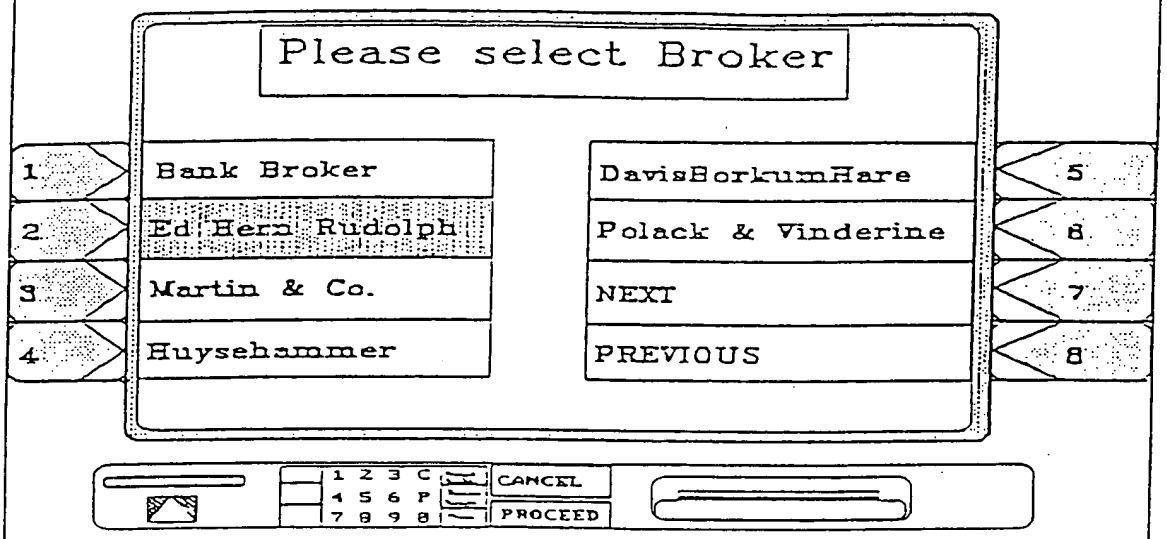

FIG 11(h)

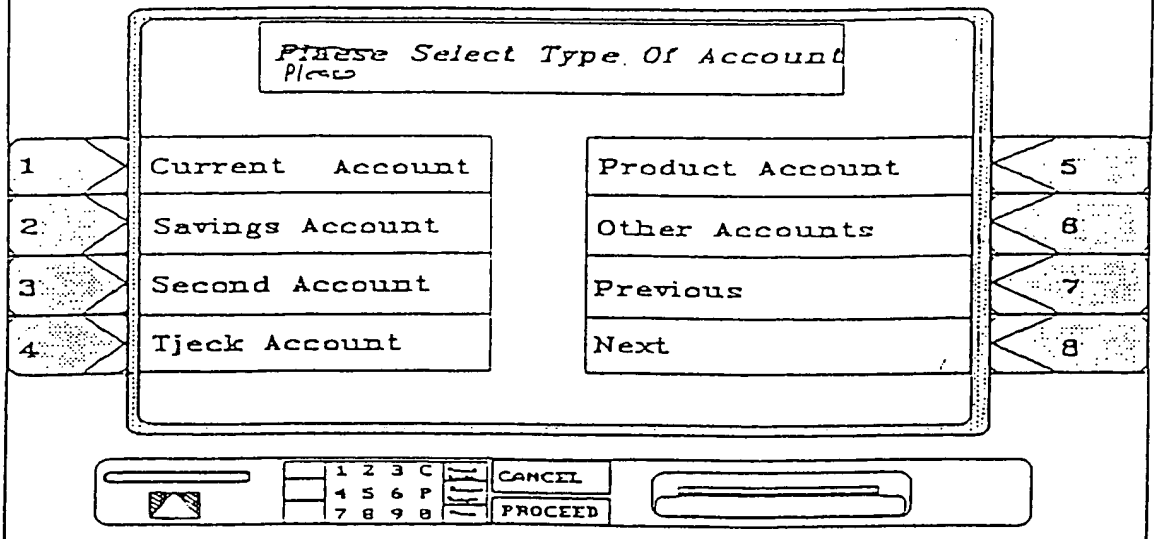

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FIG 11(i)

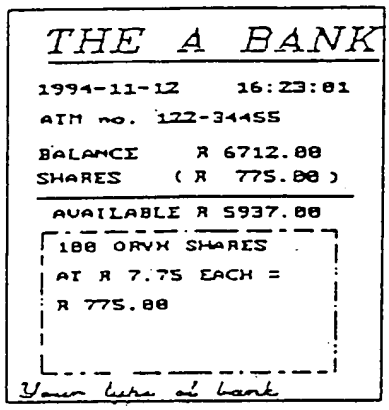
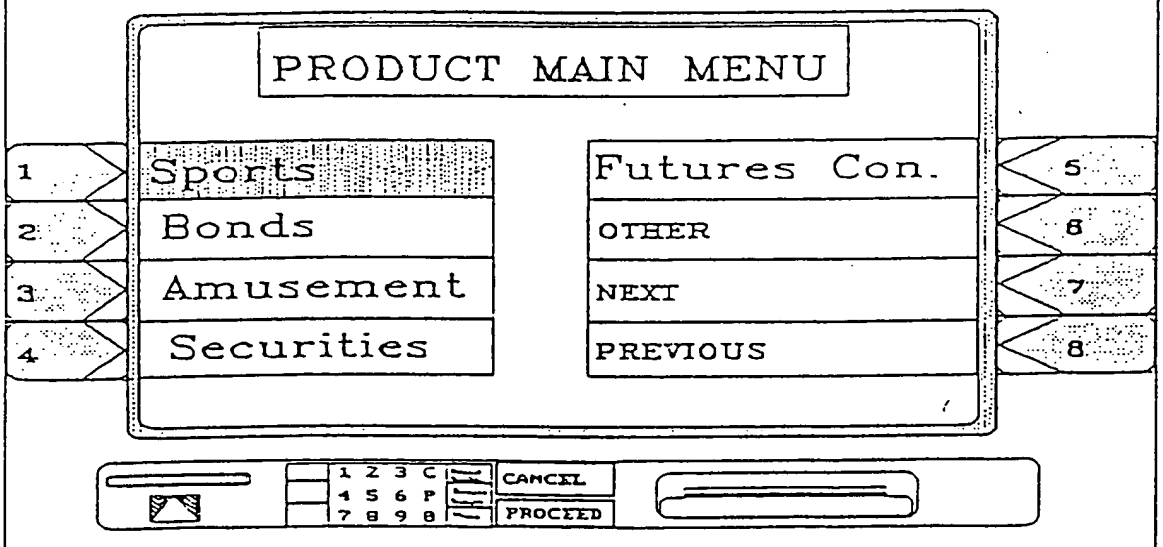


FIG 12(a)



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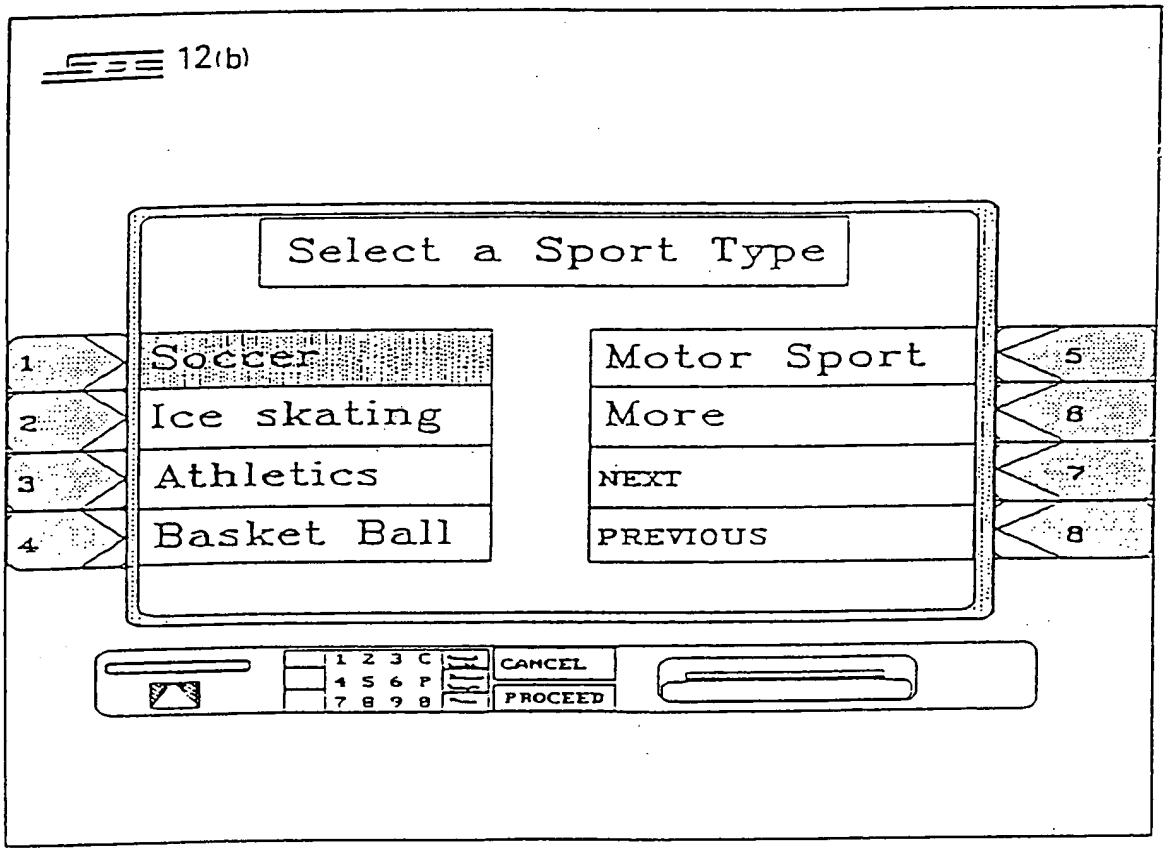
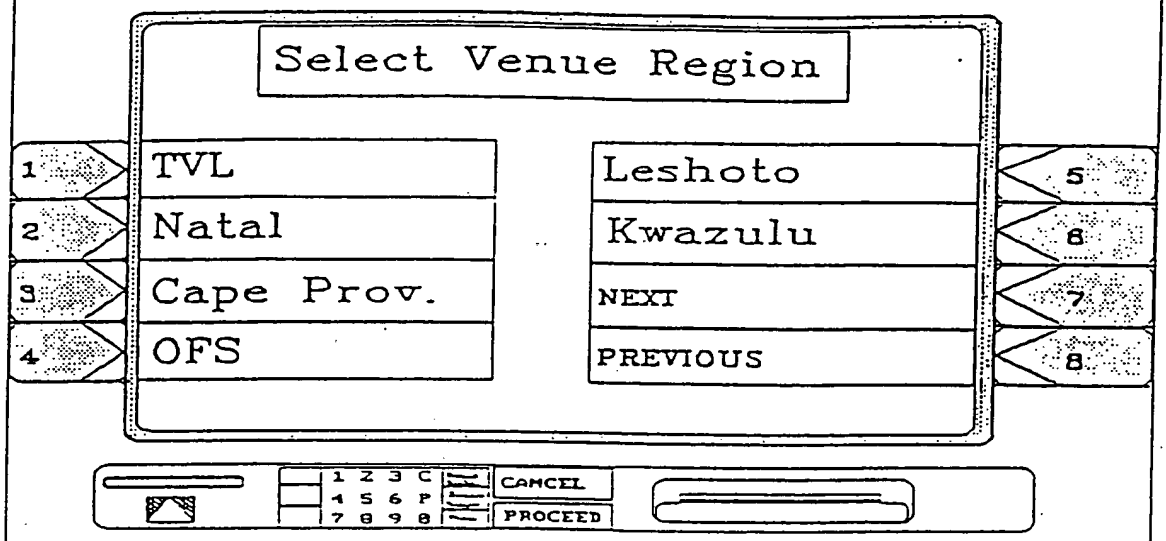
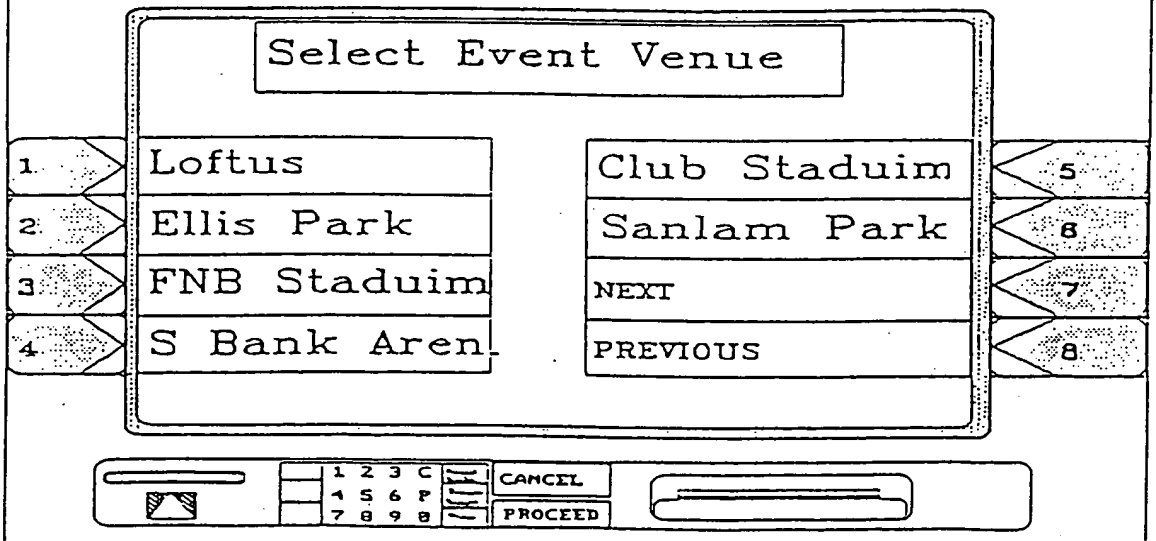
12(b)


Select a Sport Type
1
Soccer
2
Ice skating
3
Athletics
4
Basket Ball
Motor Sport
More
NEXT
PREVIOUS
5
6
7
8
1 2 3 C
4 5 6 P
7 8 9 B
CANCEL
PROCEED

12(c)



12(d)



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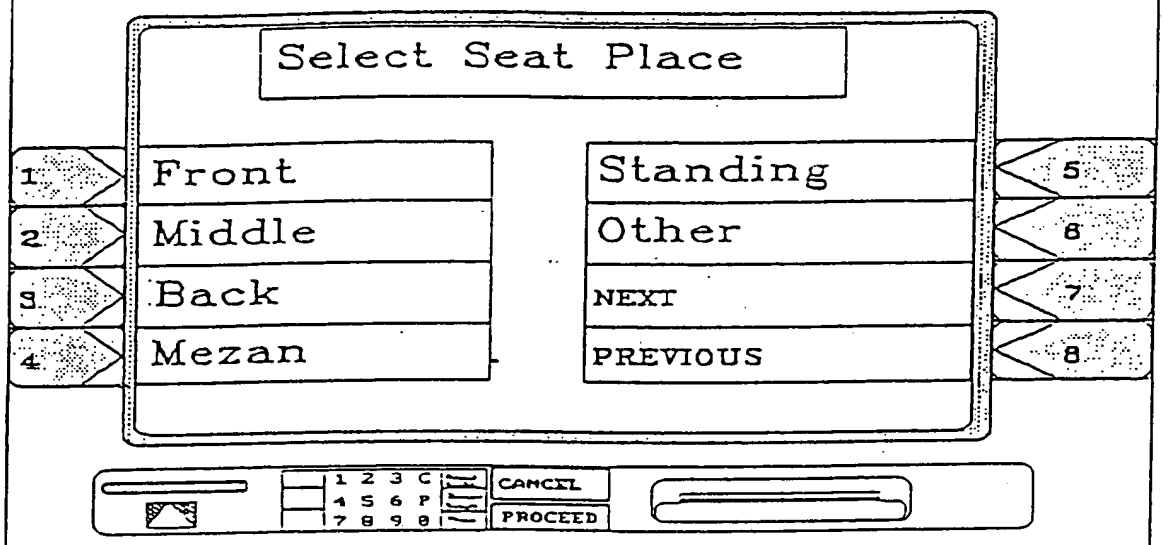
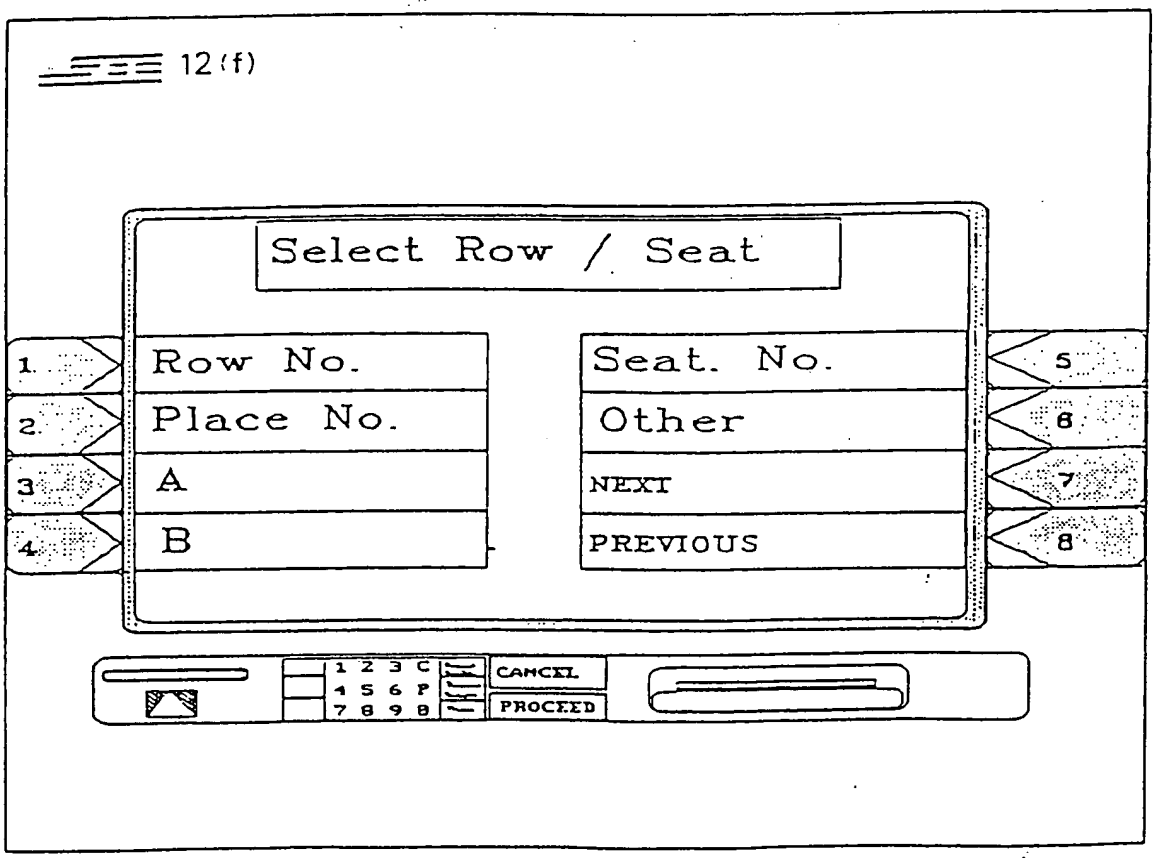
12 (e)



12 (f)



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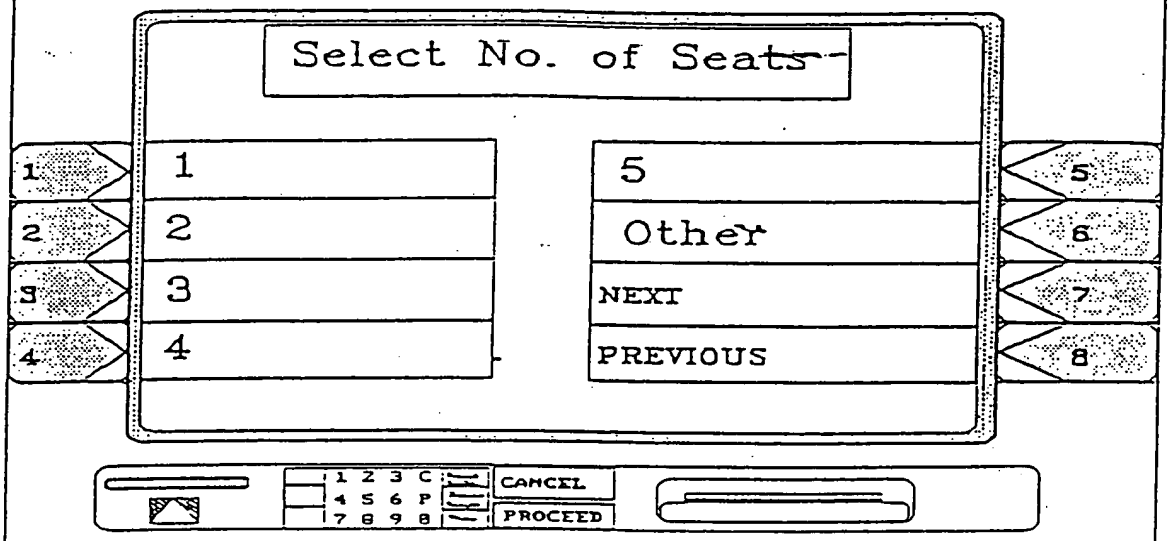
APPLICANTS PATENT ATTORNEYS

12(g)



12(h)

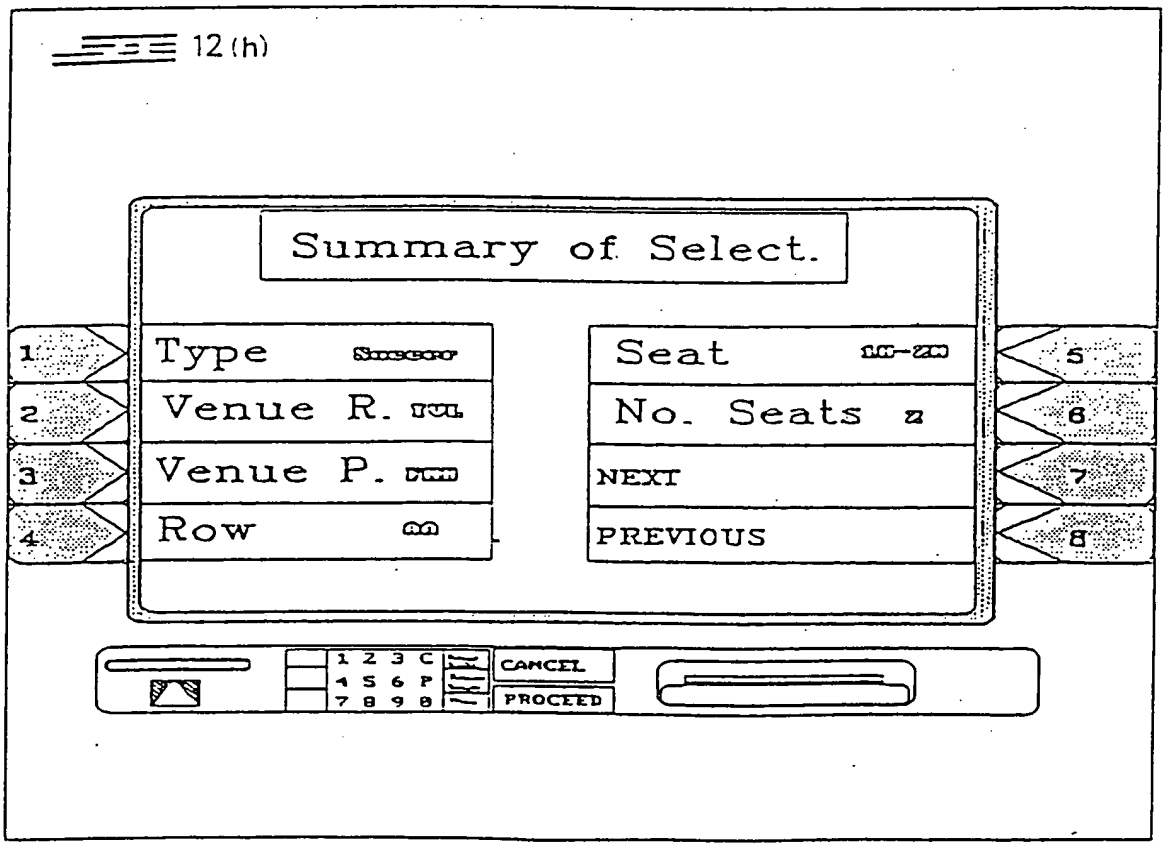


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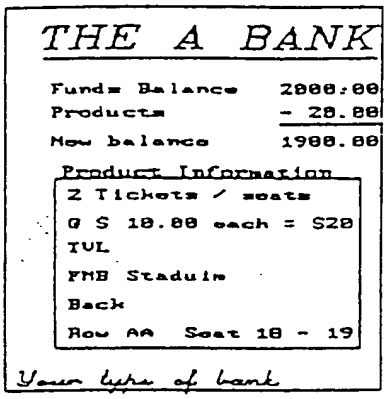
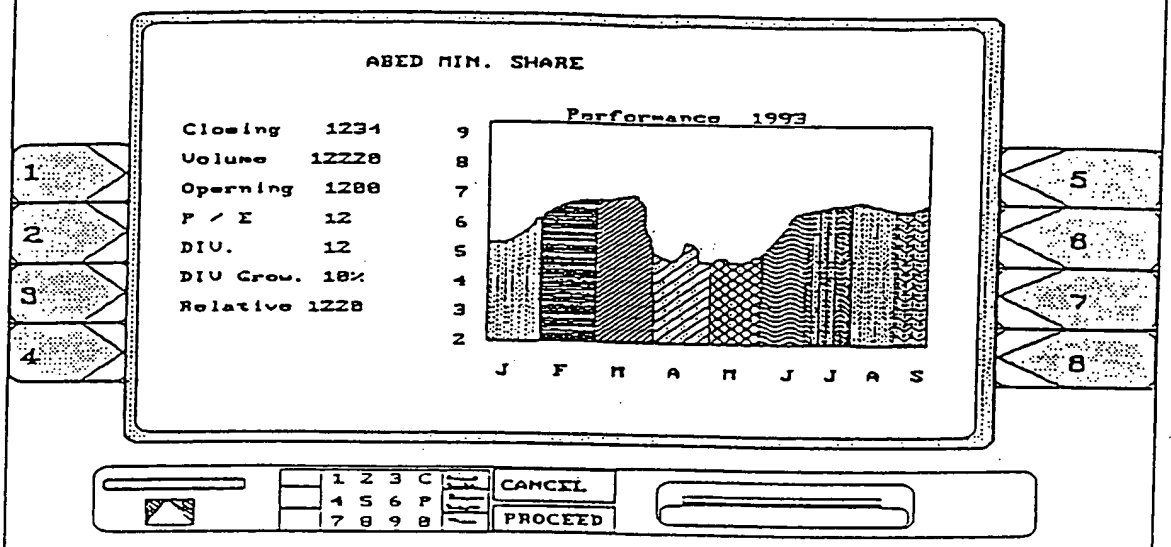
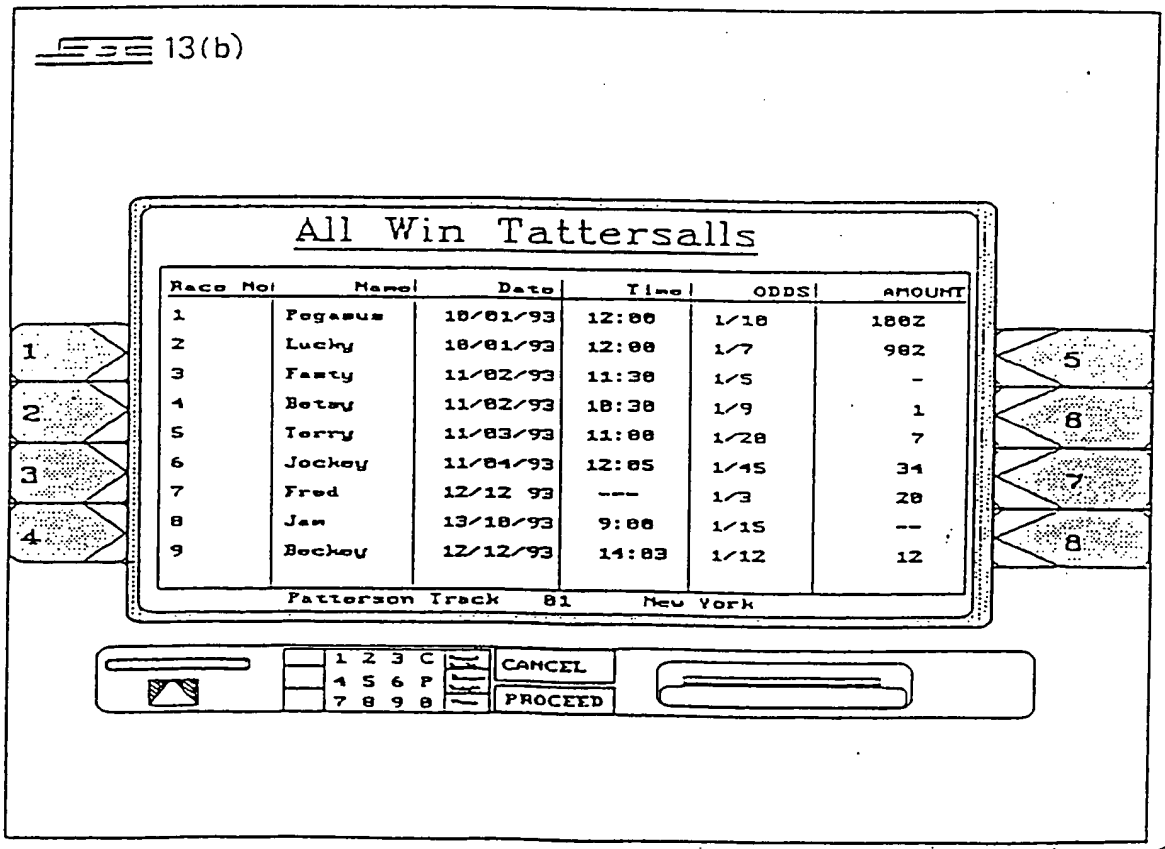
FIG 12i)


THE A BANK
Funds Balance 2000.00
Products - 20.00
New balance 1980.00
Product Information
2 Tickets / seats
@ $ 10.00 each = $20
TVL
FMB Staduim
Back
Row AA Seat 18 - 19
Your type of bank

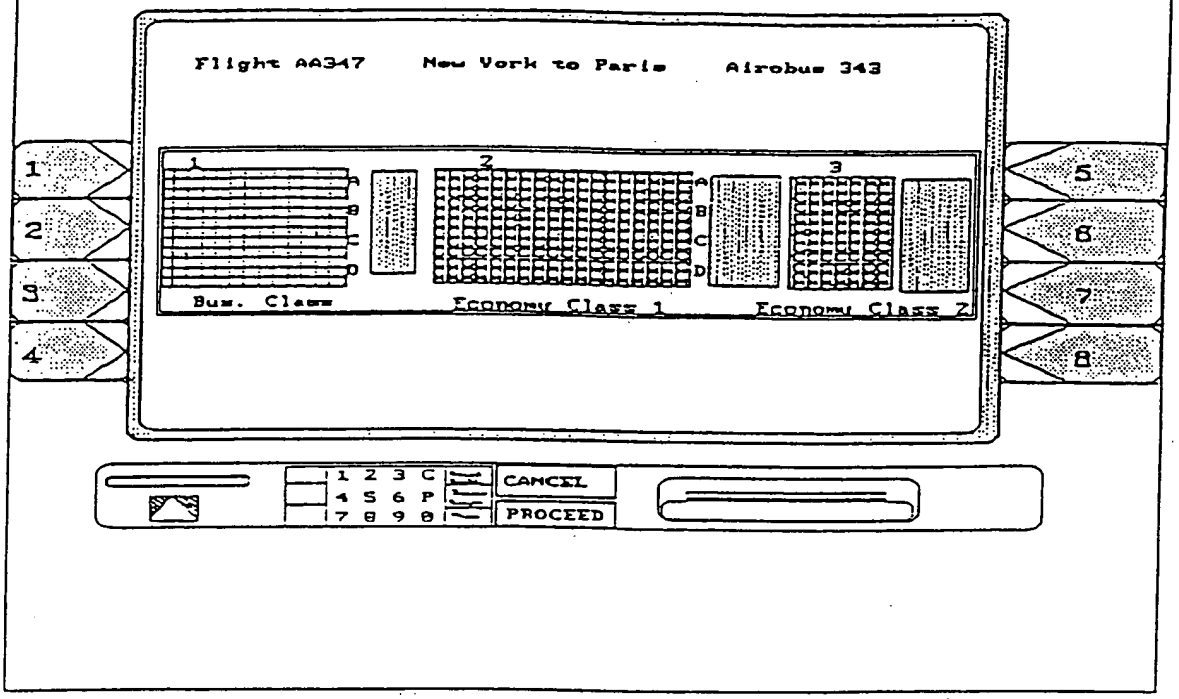
13(a)


ABED MIN. SHARE
Performance 1993
Closing 1234
Volume 12228
Opening 1288
P / E 12
DIV. 12
DIV Grow. 18%
Relative 1228
9
8
7
6
5
4
3
2
J F M A M J J A S
1
2
3
4
5
6
7
8
1 2 3 C
4 5 6 P
7 8 9 B
CANCEL
PROCEED

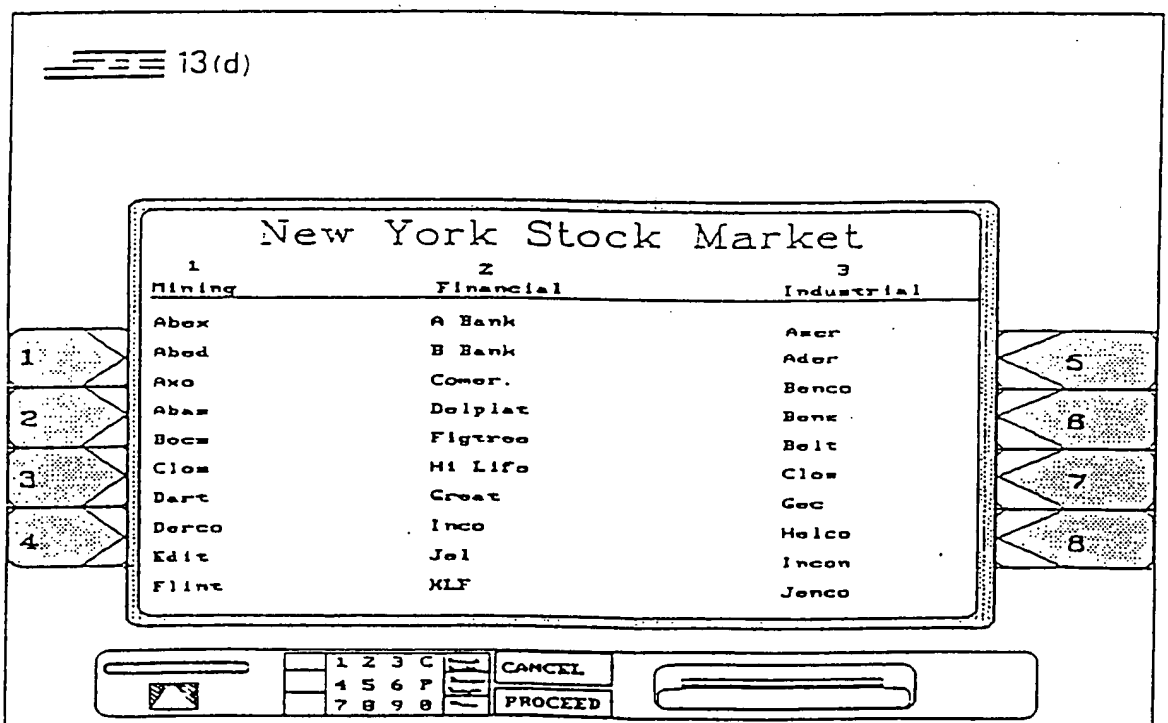
13(b)


All Win Tattersalls
Race No| Name| Date| Time| ODDS| AMOUNT
1 Pegasus 10/01/93 12:00 1/10 100%
2 Lucky 10/01/93 12:00 1/7 90%
3 Fasty 11/02/93 11:30 1/5 -
4 Betsy 11/02/93 10:30 1/9 1
5 Terry 11/03/93 11:00 1/20 7
6 Jockey 11/04/93 12:05 1/45 34
7 Fred 12/12 93 --- 1/3 20
8 Jam 13/10/93 9:00 1/15 --
9 Bockey 12/12/93 14:03 1/12 12
Patterson Track 81 New York
1
2
3
4
5
6
7
8
1 2 3 C
4 5 6 P
7 8 9 B
CANCEL
PROCEED

13(c)



13(d)



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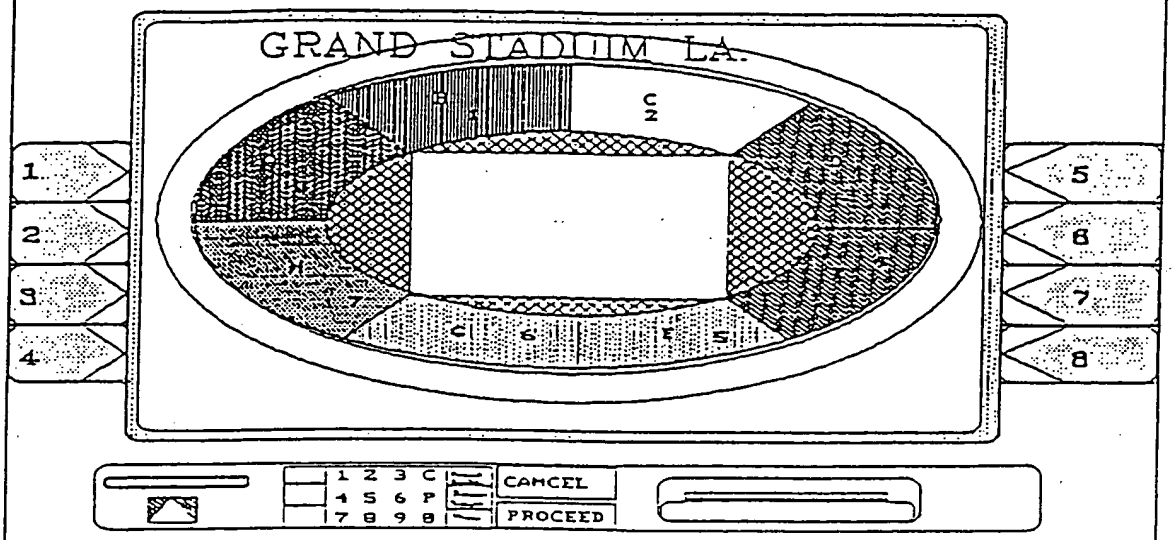
13(e)



13(f)

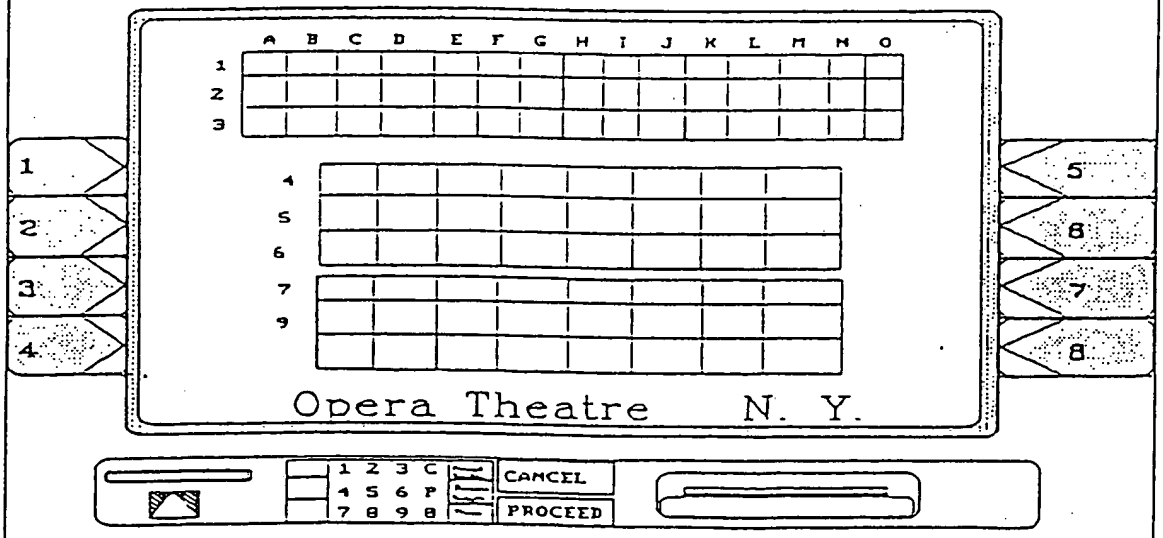


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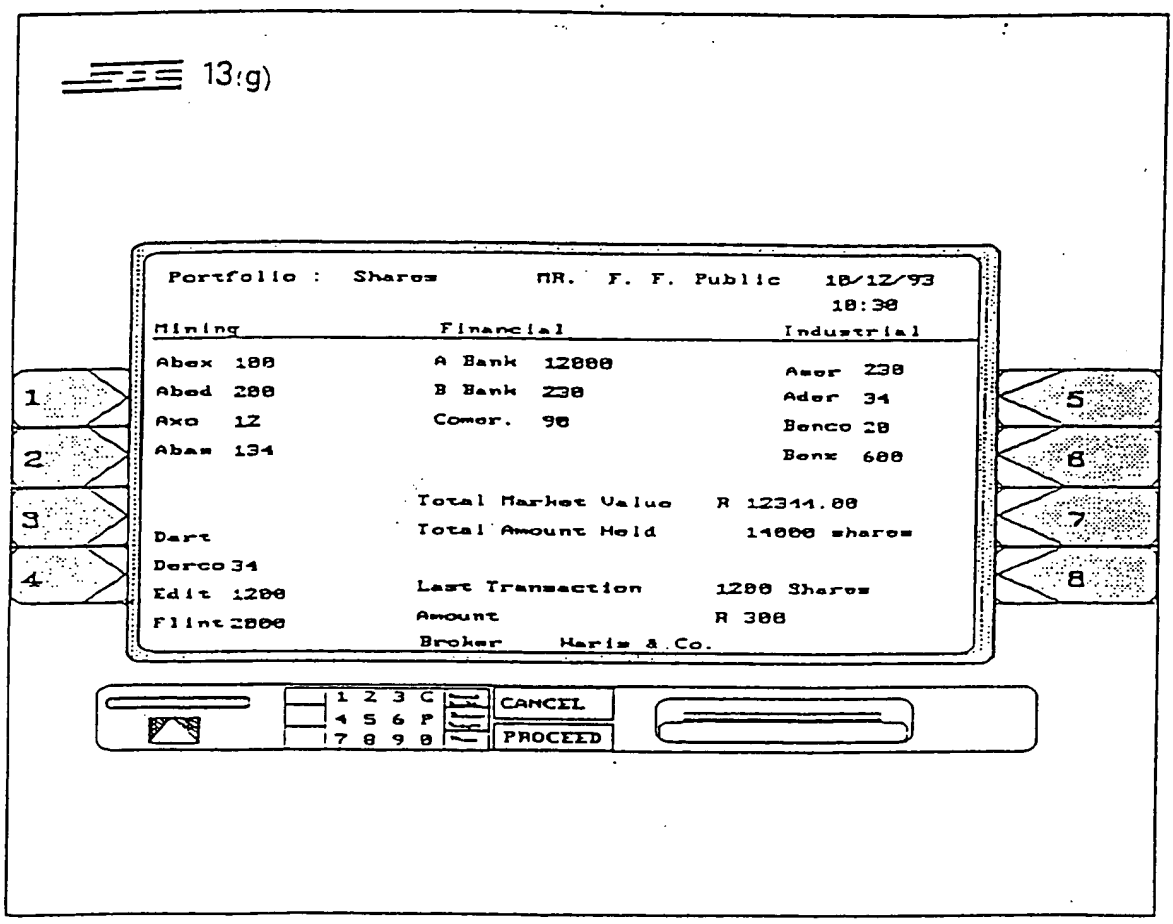
FIG 13(g)



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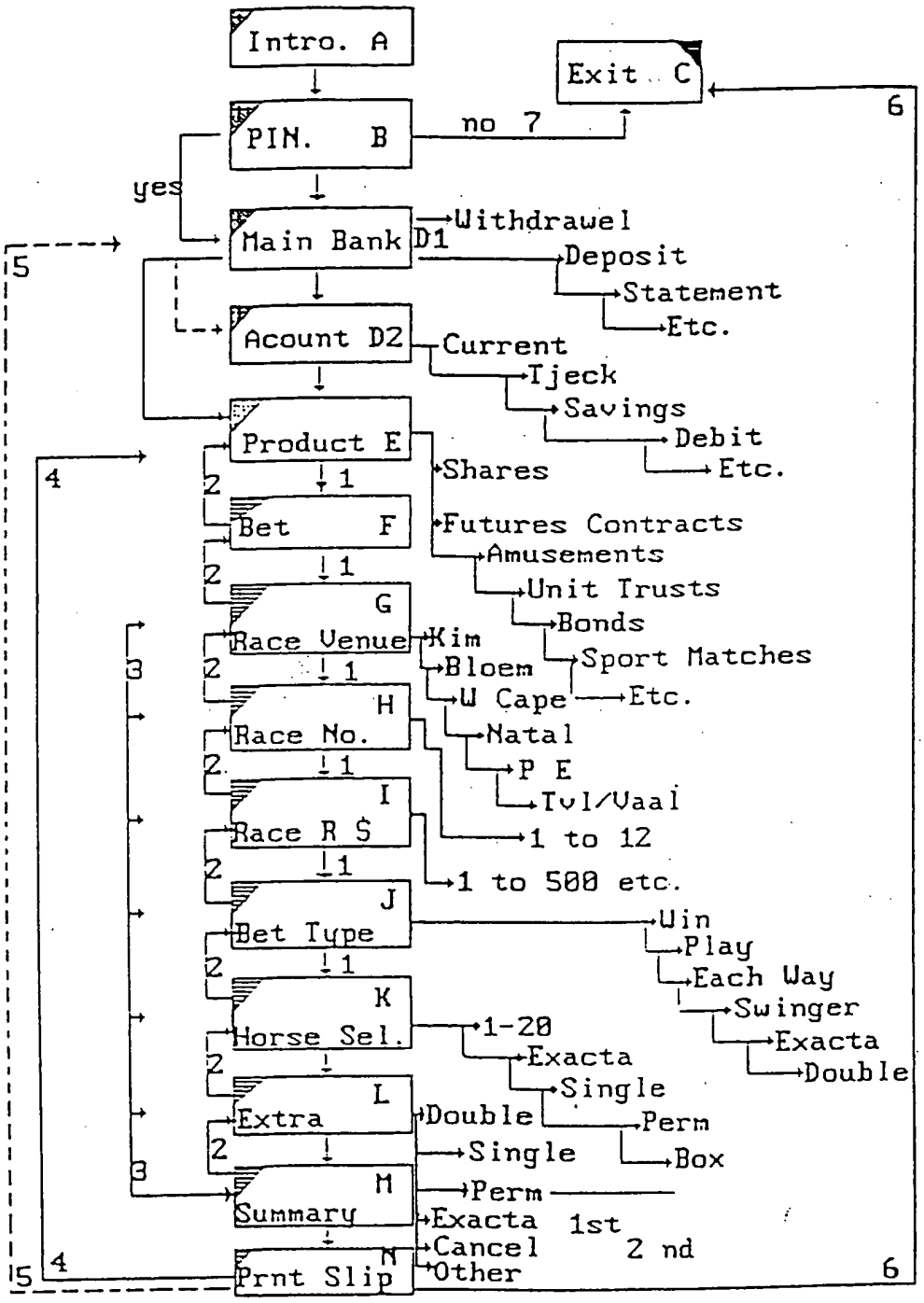
14(a)

Menu Map



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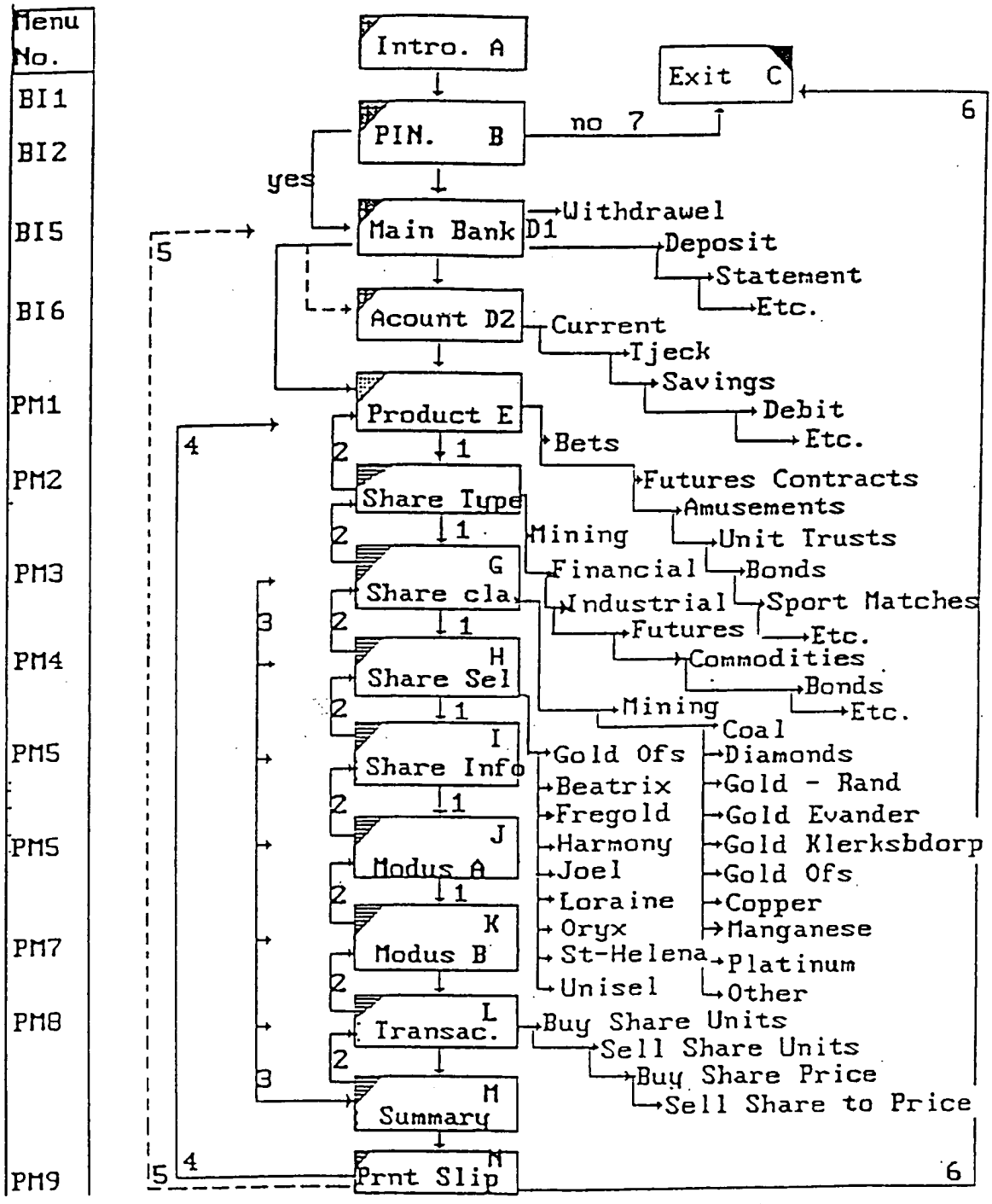
Shares & Commodities Menu Map



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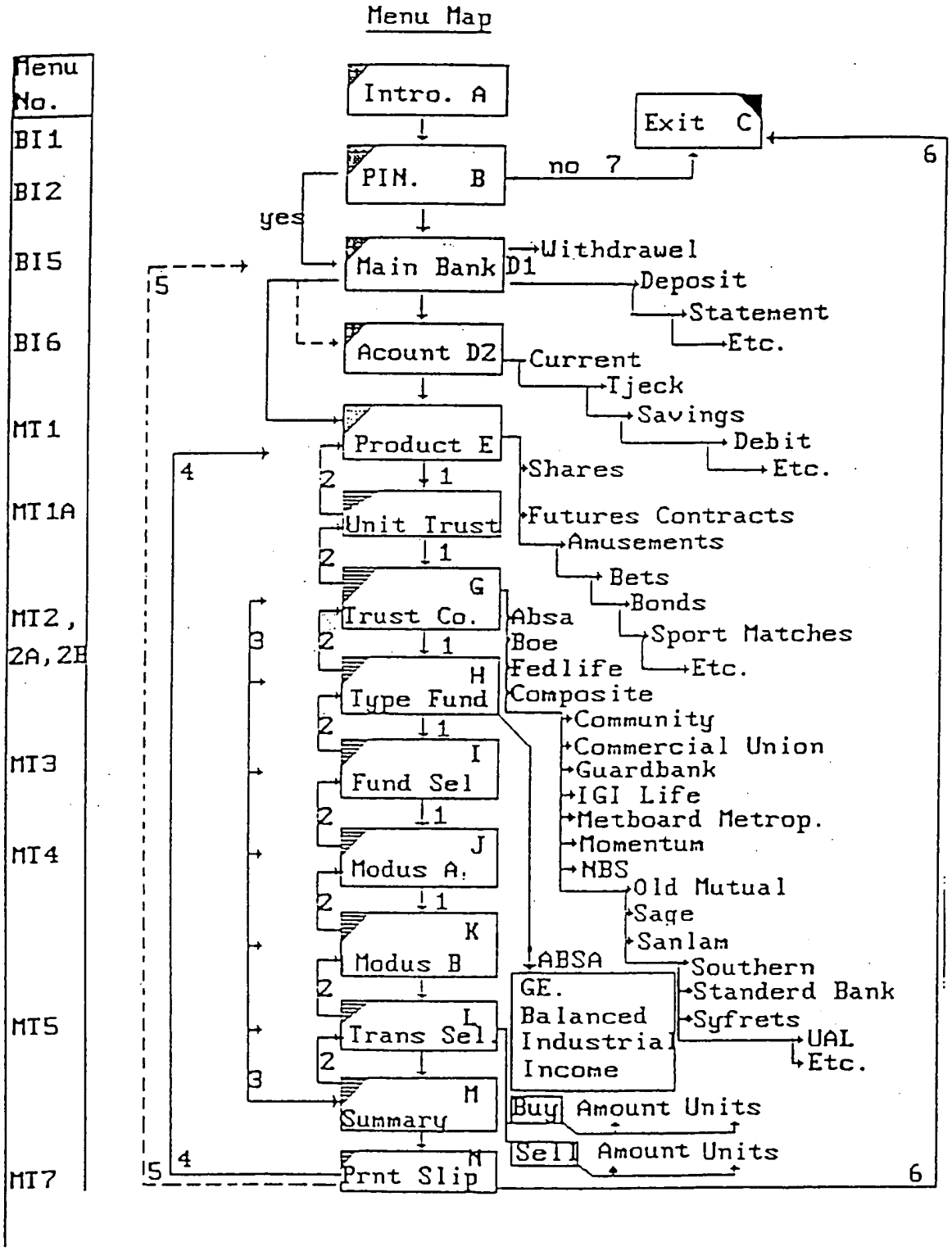
14(c)



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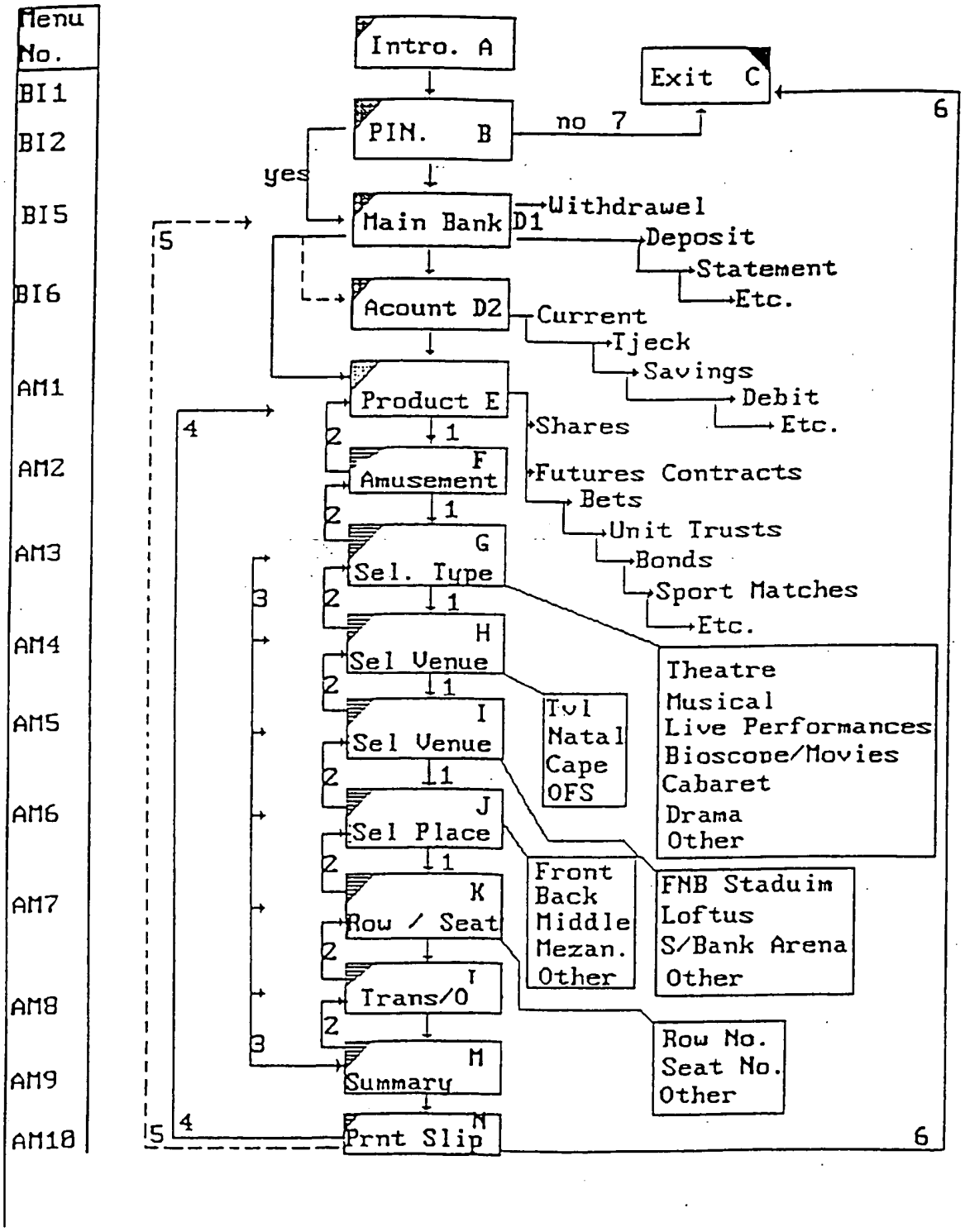
14(d)

Menu Map



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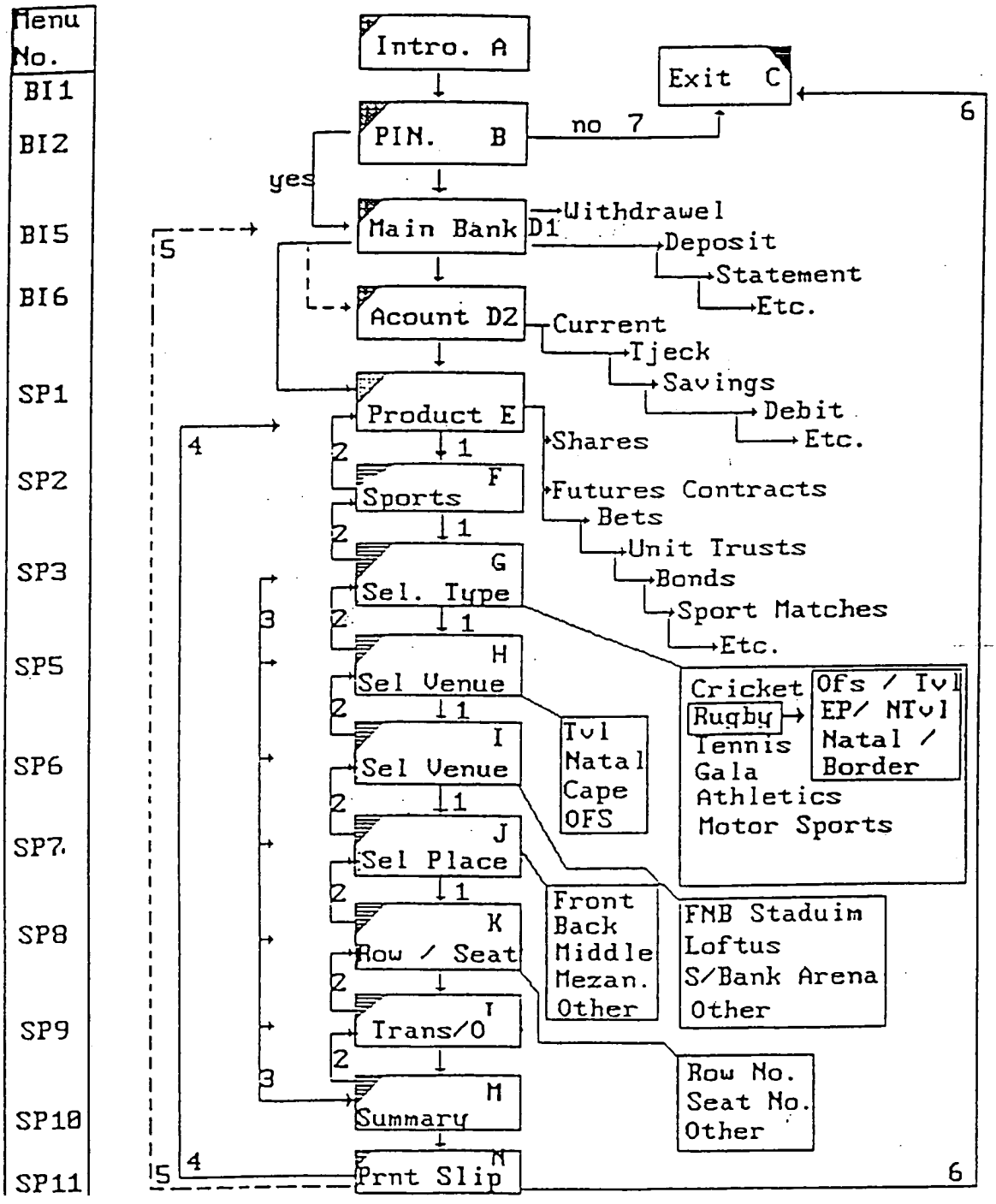
14(e)

Menu Map



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14(f)

Menu Map

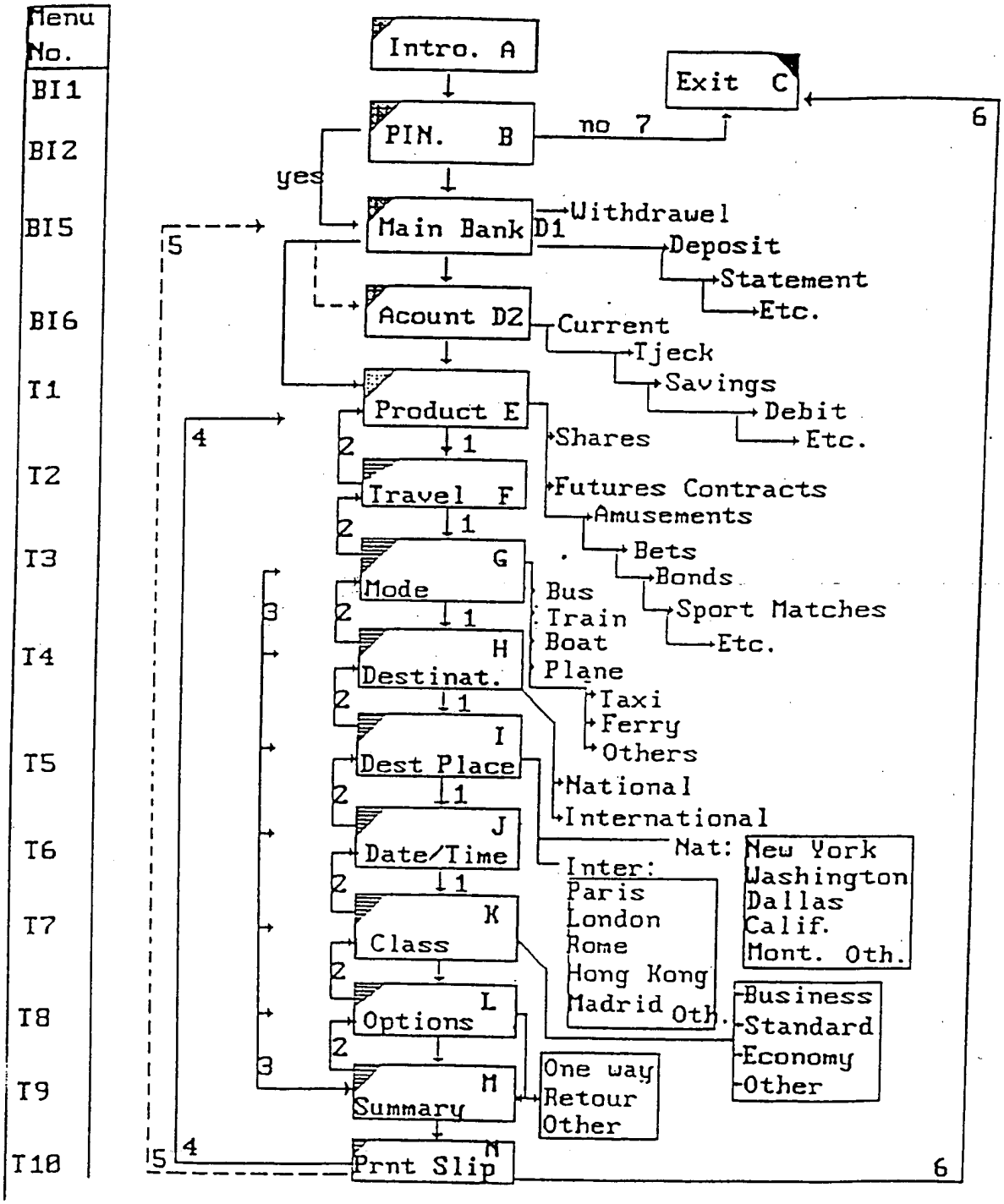
Menu No.
BI1
BI2
BI5
BI6
I1
I2
I3
I4
I5
I6
I7
I8
I9
I10
Intro. A
PIN. B
no 7
Exit C
yes
Main Bank D1
Withdrawel
Deposit
Statement
Etc.
Acount D2
Current
Tjeck
Savings
Debit
Etc.
Product E
Shares
Futures Contracts
Amusements
Bets
Bonds
Sport Matches
Etc.
Travel F
Mode G
Bus
Train
Boat
Plane
Destinat. H
Taxi
Ferry
Others
Dest Place I
National
International
Date/Time J
Nat:
New York
Washington
Dallas
Calif.
Mont. Oth.
Inter:
Paris
London
Rome
Hong Kong
Madrid Oth.
Class K
Business
Standard
Economy
Other
Options L
One way
Retour
Other
Summary M
Prnt Slip N
1
2
3
4
5
6

FIG 14(g)

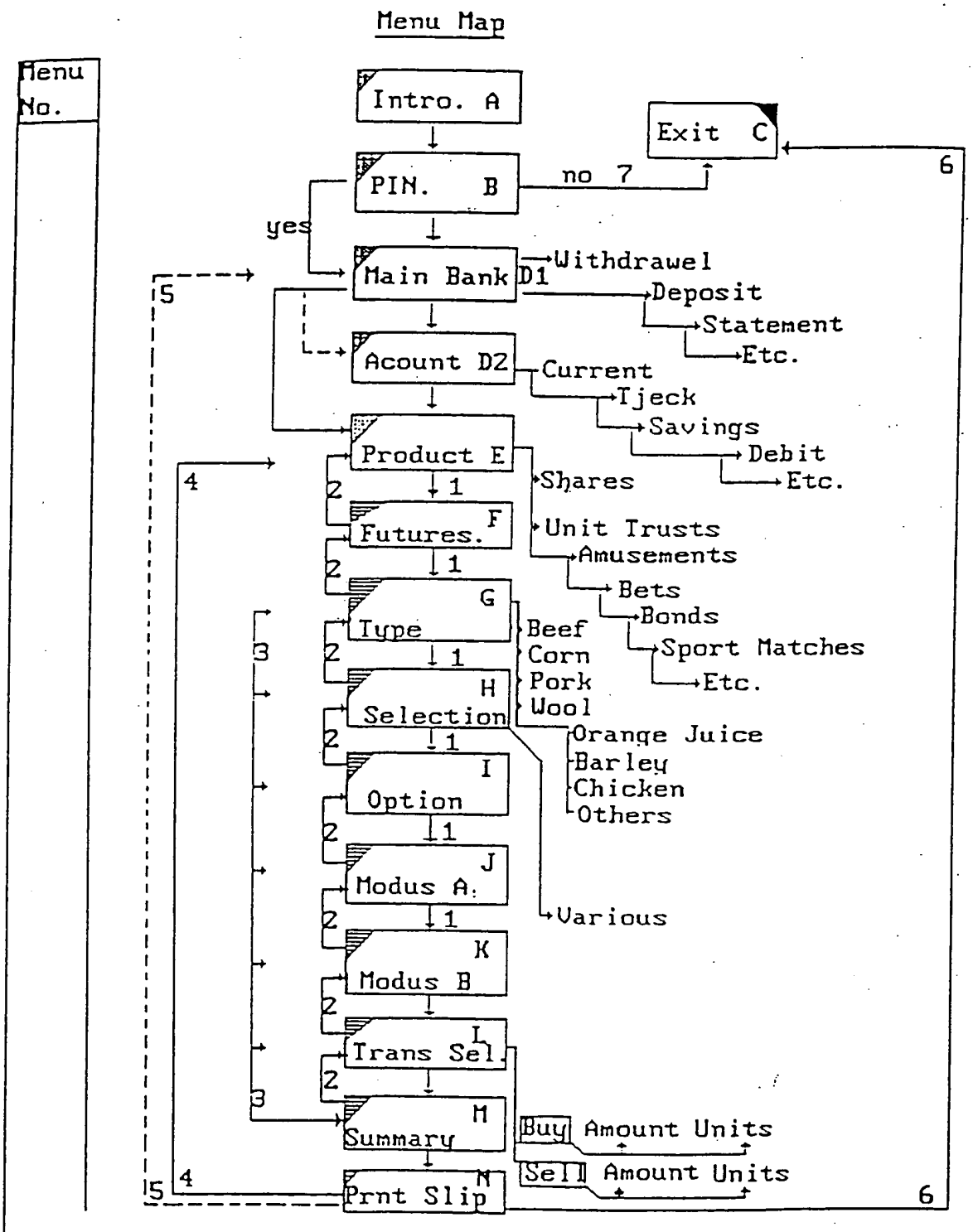

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FIG 14 (h)

Menu Map

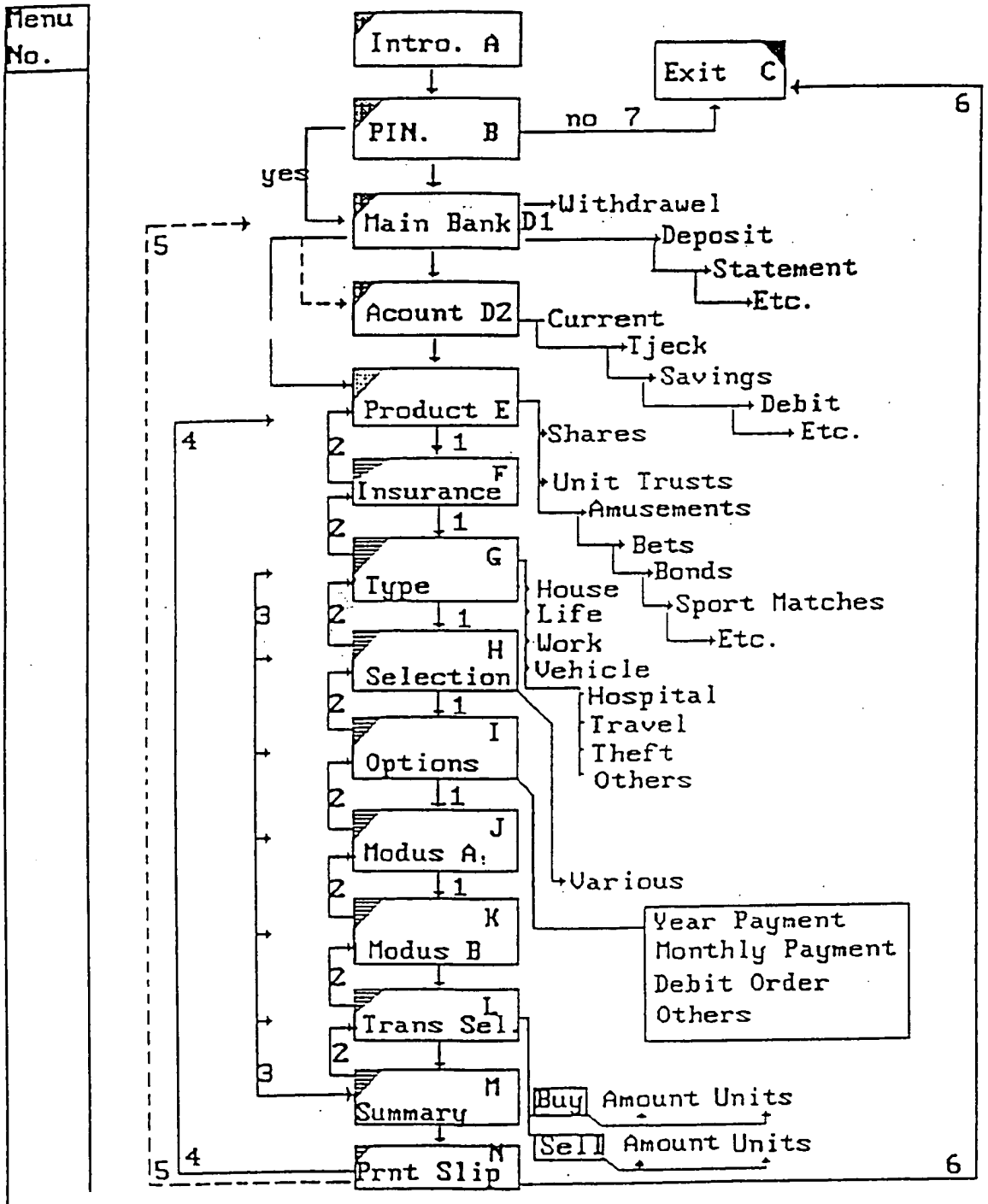

FIG 15(a)

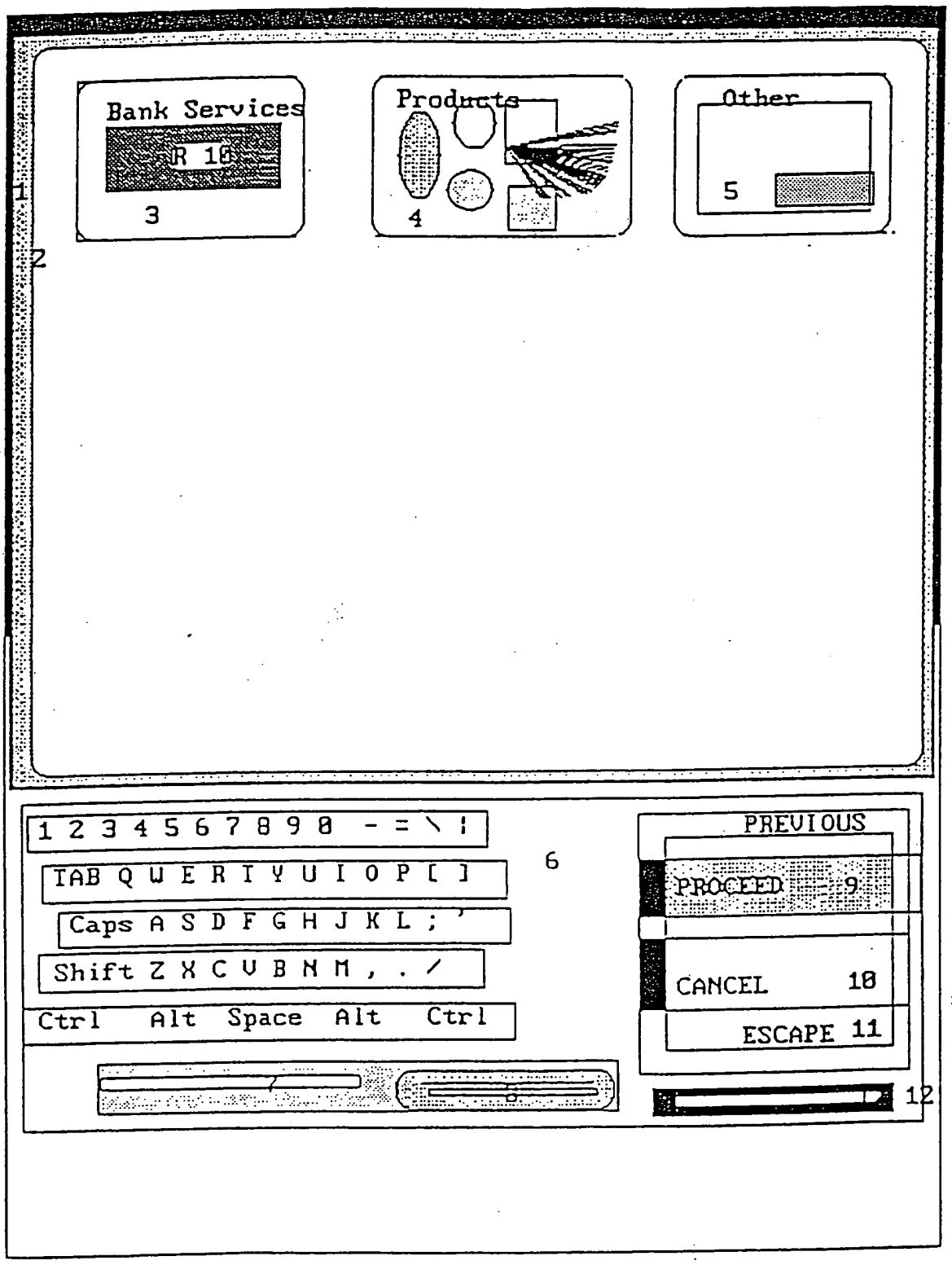

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FIG 15 (b)

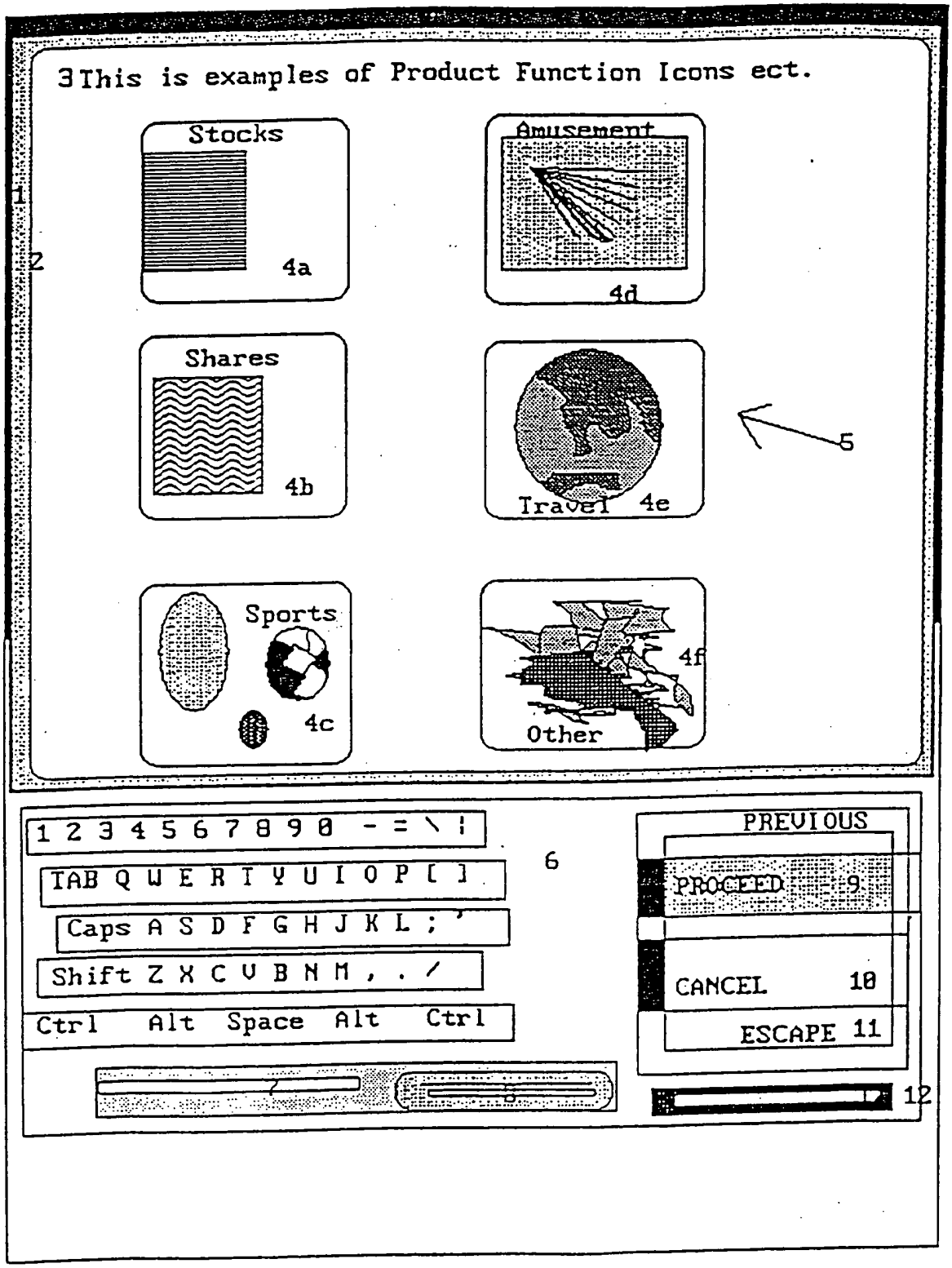

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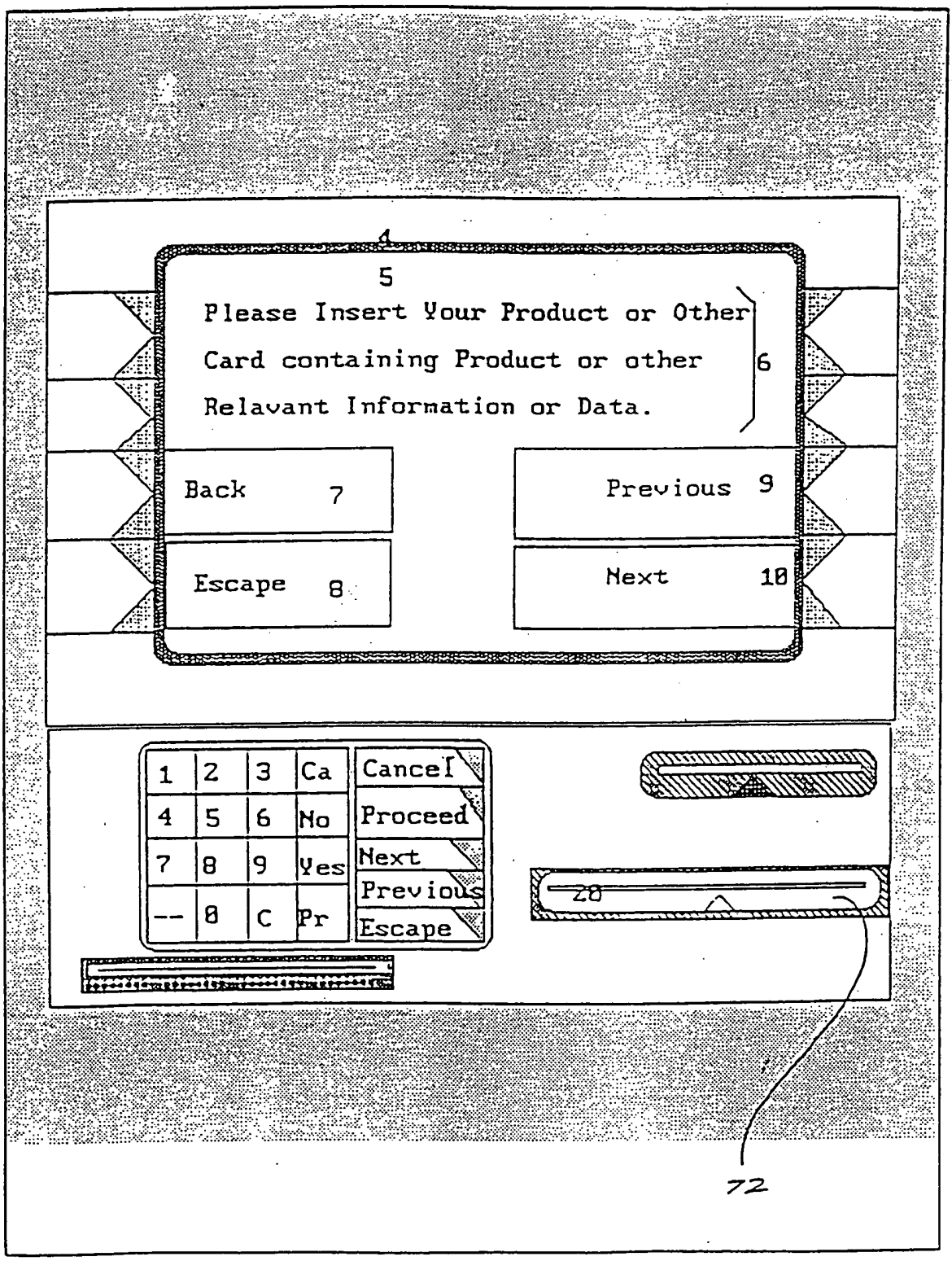
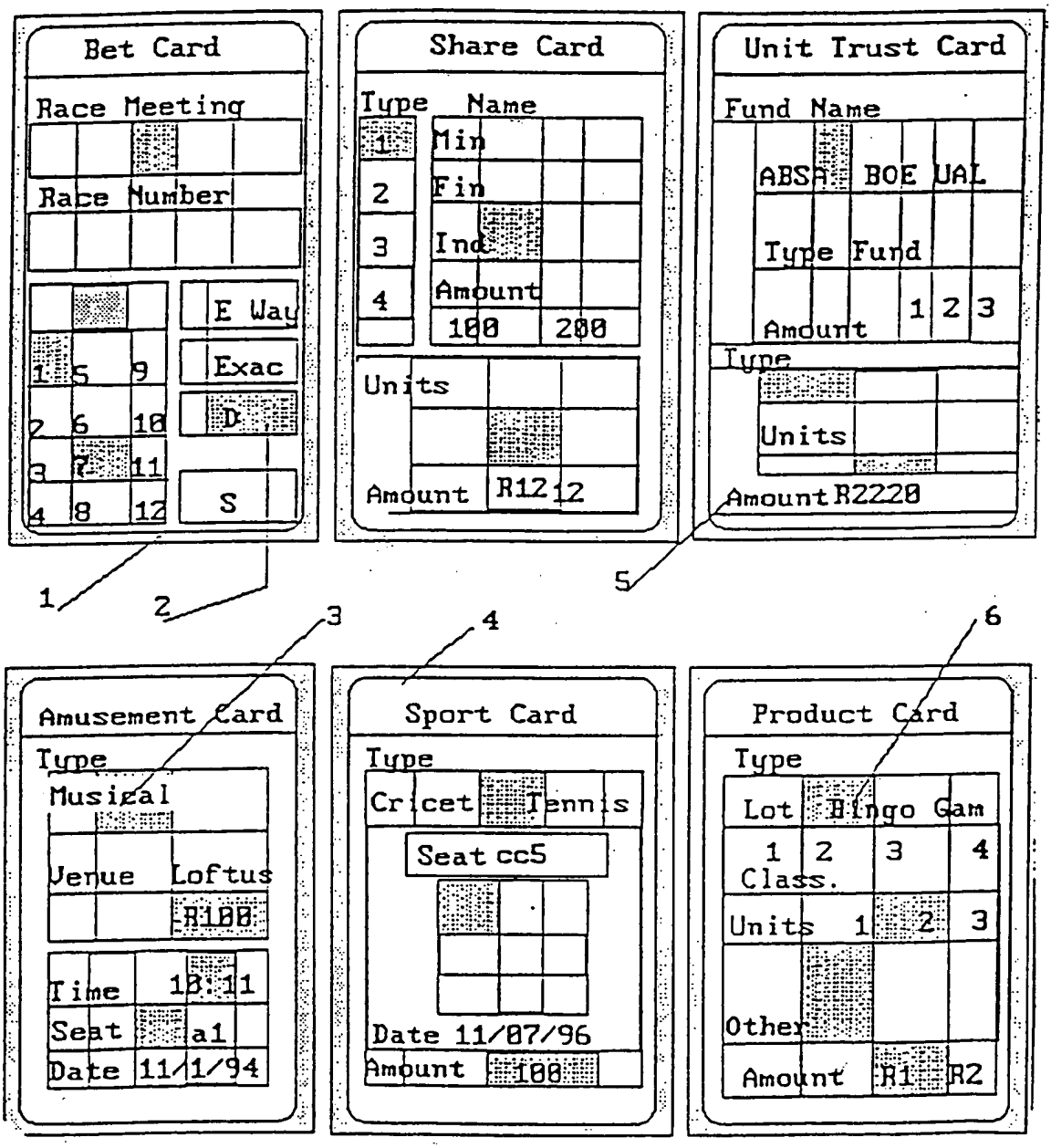
FIG 16(a)


5
Please Insert Your Product or Other
Card containing Product or other
Relavant Information or Data.
6
Back 7
Previous 9
Escape 8
Next 10
1 2 3 Ca
4 5 6 No
7 8 9 Yes
-- 0 C Pr
Cancel
Proceed
Next
Previous
Escape
28
72

See 16(b)



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/11360

A. CLASSIFICATION OF SUBJECT MATTER
IPC(6) :G07F 7/08; G06F 17/60
US CL :902/8;235/379
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 902/8;235/379

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US,A, 4,550,246 (MARKMAN) 29 OCTOBER 1985 SEE ENTIRE DOCUMENT	1-25
Y	US,A, 5,007,084 (MATERRA ET AL) 09 APRIL 1991 SEE ENTIRE DOCUMENT	1-25
Y	US,A 5,183,143 (LATCHINIAN ET AL) 02 FEBRUARY 1993 SEE ENTIRE DOCUMENT	1-25
Y	US,A 5,283,829 (ANDERSON) 01 FEBRUARY 1994 SEE ENTIRE DOCUMENT	1-25

5587+39

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
02 DECEMBER 1995

Date of mailing of the international search report
29 DEC 1995

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231
Facsimile No. (703) 305-3230

Authorized officer
HAROLD PITTS
Telephone No. (703)308-0717

Form PCT/ISA/210 (second sheet)(July 1992)*

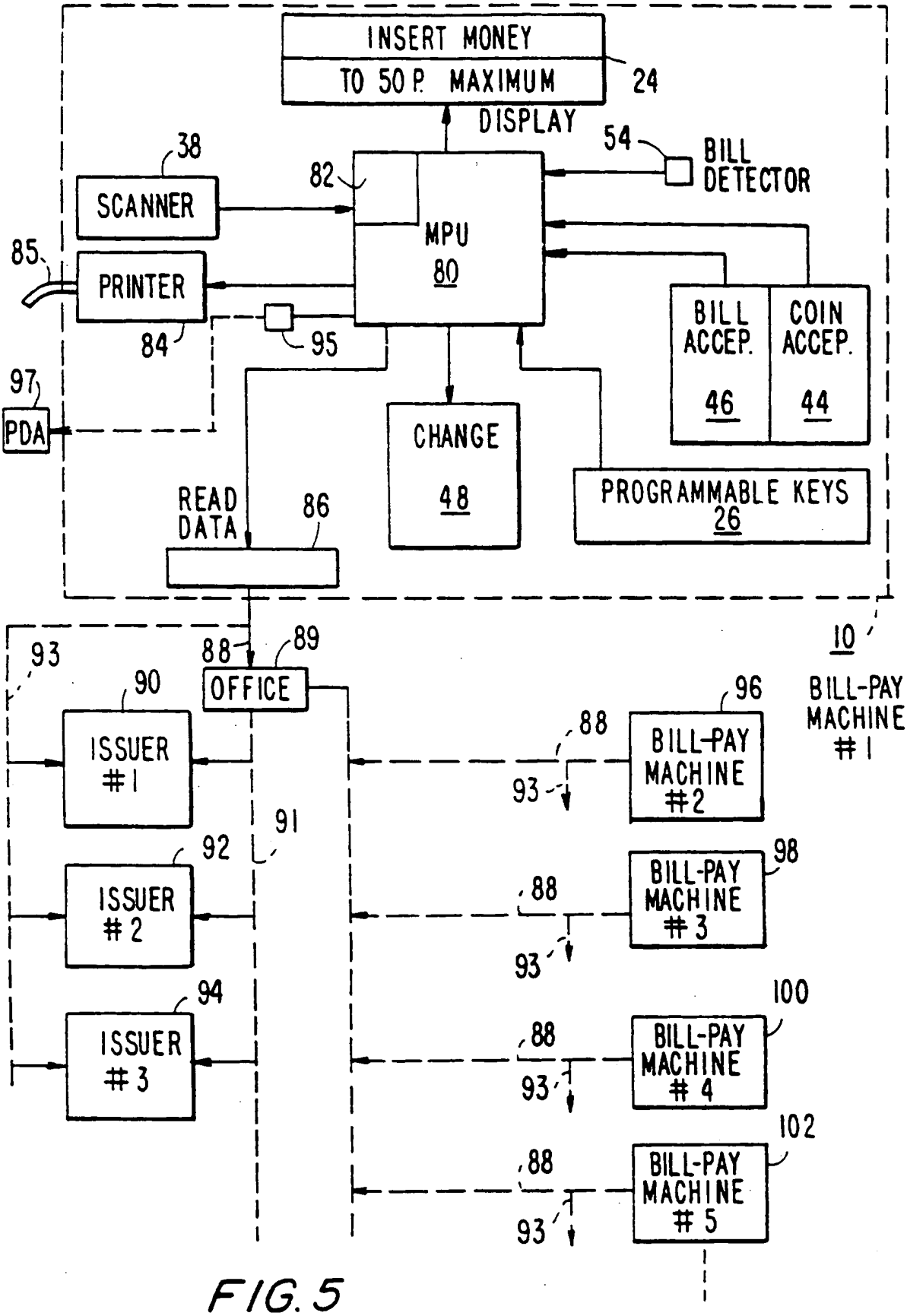
INSERT MONEY
TO 50 P. MAXIMUM
24
DISPLAY
38
SCANNER
82
MPU
80
54
BILL
DETECTOR
85
PRINTER
84
95
97
PDA
BILL
ACCEP.
46
COIN
ACCEP.
44
CHANGE
48
PROGRAMMABLE KEYS
26
READ
DATA
86
10
BILL-PAY
MACHINE
#1
93
88
89
OFFICE
90
ISSUER
#1
91
92
ISSUER
#2
94
ISSUER
#3
96
BILL-PAY
MACHINE
#2
98
BILL-PAY
MACHINE
#3
100
BILL-PAY
MACHINE
#4
102
BILL-PAY
MACHINE
#5

FIG. 5

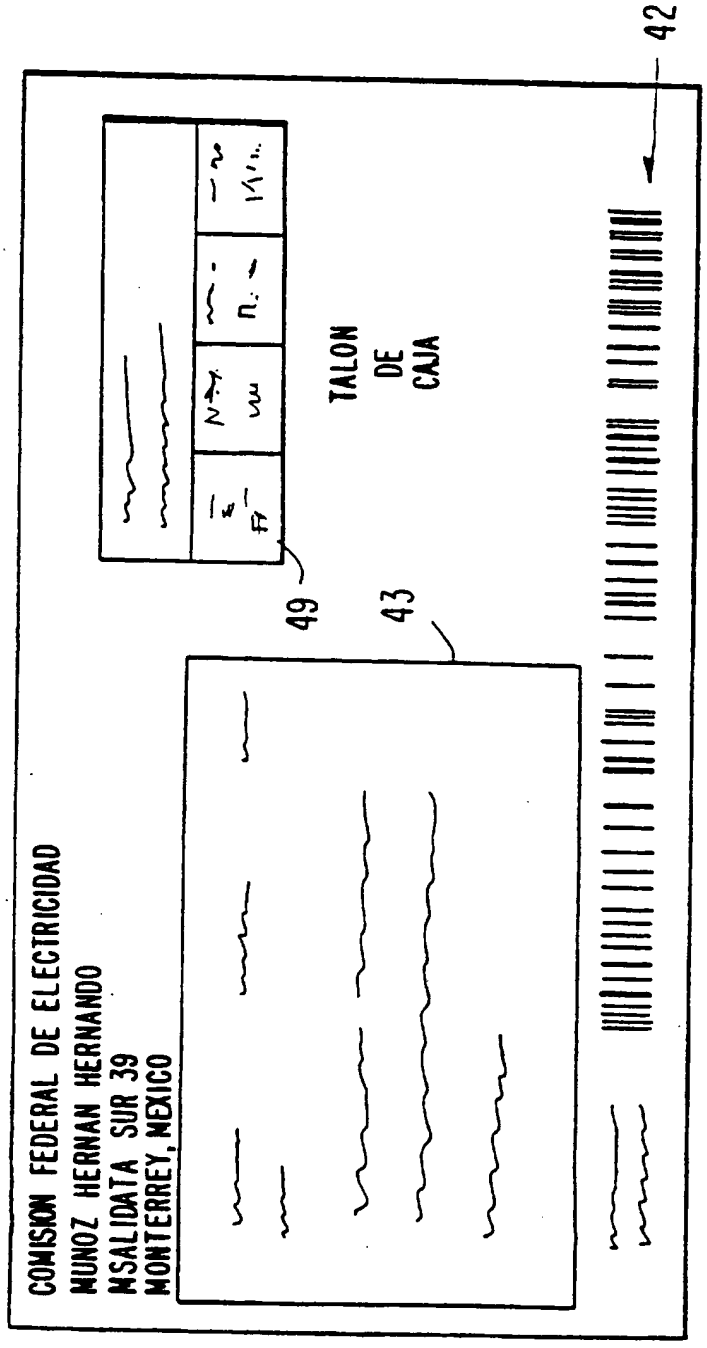
COMISION FEDERAL DE ELECTRICIDAD
MUNOZ HERNAN HERNANDO
MSALIDATA SUR 39
MONTERREY, MEXICO
TALON
DE
CAJA
42
40
43
49

FIG. 3

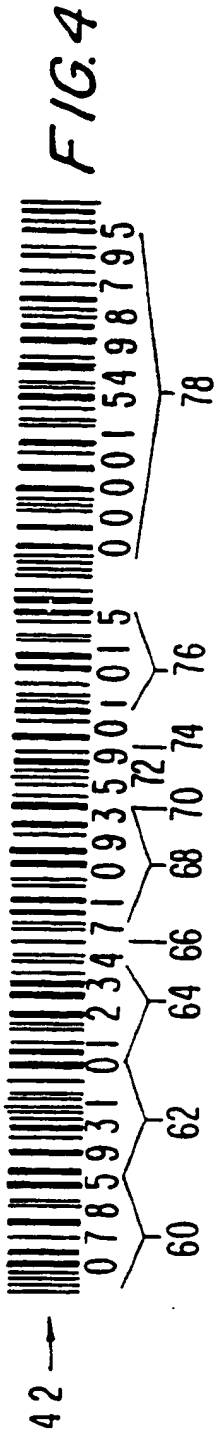
42
0785931 01234 71 09359 01015 00001549 8795
60
62
64
66
68
70
72
74
76
78

FIG. 4

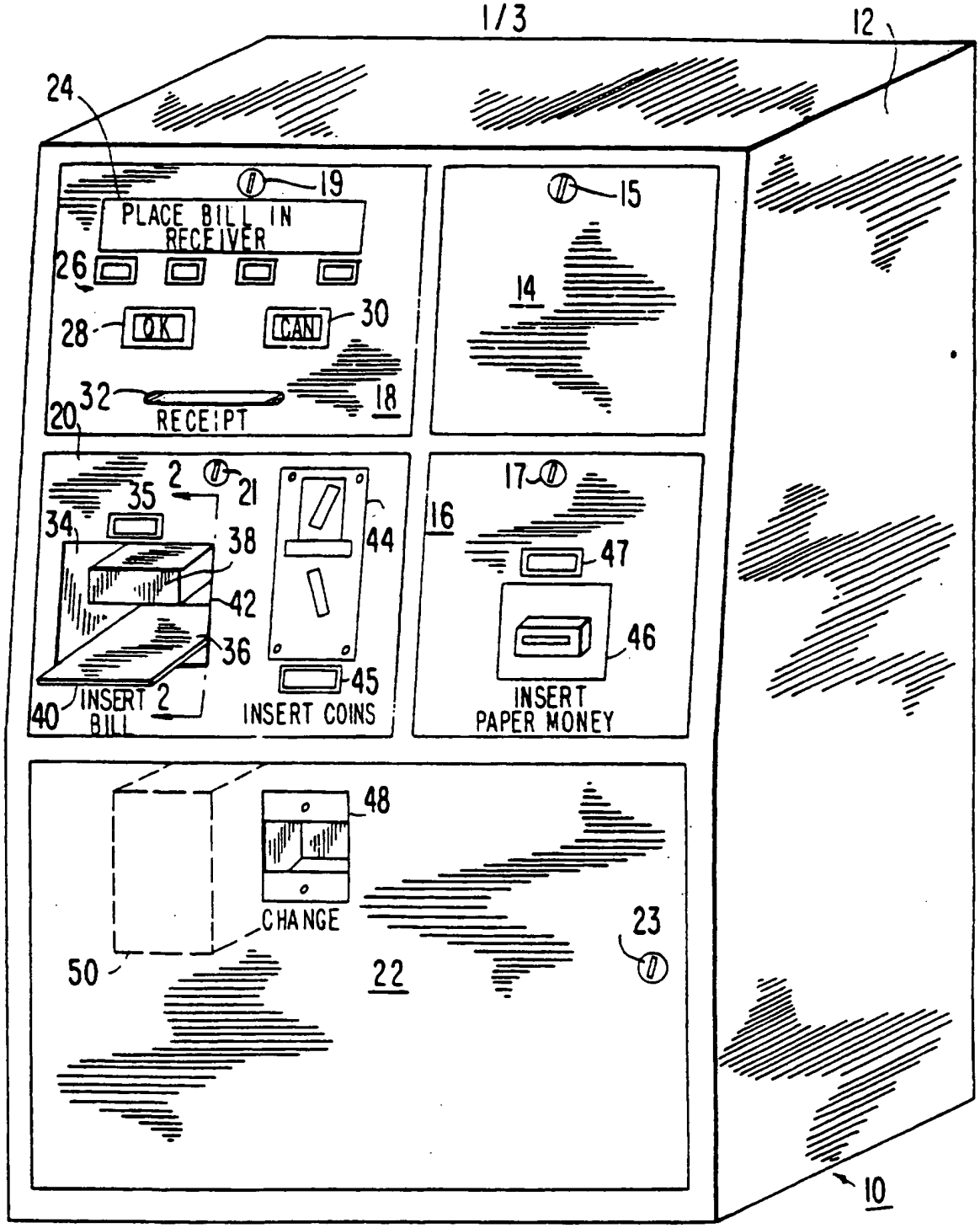
12
24
19
PLACE BILL IN RECEIVER
26
28
OK
CAN
30
32
RECEIPT
18
20
15
14
2
21
35
34
38
42
36
44
40
INSERT 2 BILL
45
INSERT COINS
17
16
47
46
INSERT PAPER MONEY
48
CHANGE
50
22
23
10

FIG.1

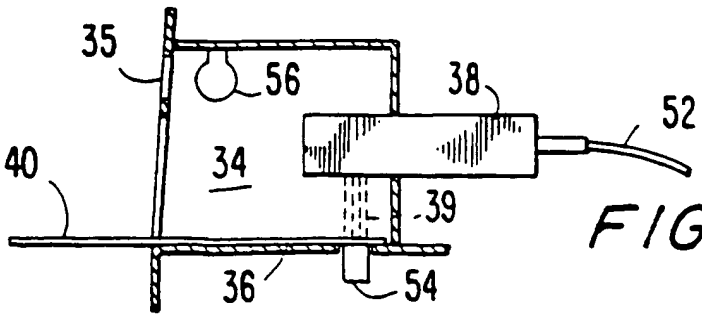
35
56
38
52
40
34
39
36
54

FIG.2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/11360

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

I. CLAIMS 1-5 AND 21-25 DRAWN TO ELECTRONIC FUNDS TRANSFER CLASSIFIED IN 902/8
II. CLAIMS 6-20 DRAWN TO AN ATM MACHINE CLASSIFIED IN 235/379

International Application does not comply with the requirement of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated below:

THE CLAIMS ARE NOT SO LINKED SINCE THE ELECTRONIC FUNDS TRANSFER SYSTEM OF GROUP I DOES NOT REQUIRE THE PARTICULAR ATM STRUCTURE OF GROUP II.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ No protest accompanied the payment of additional search fees.

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